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APR 1985

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INSTALLATION RESTORATION PROGRAM

PHASE I - RECORDS SEARCH

SCOTT AFB, ILLINOIS

PREPARED FOR

UNITED STATES AIR FORCE

AFESC/DEV

Tyndall AFB, Flordia

and

HQ MAC/DEEV

Scott AFB, Illinois

APRIL 1985

ES ENGINEERING-SCIENCE

NOTICE

Installation Restoration Program

Phase I: Records Search

SCOTT AFB, ILLINOIS

Prepared For

United States Air Force

AFESC/DEV

Tyndall AFB, Florida

and

HQ MAC/DEEV

SCOTT AFB, ILLINOIS

April 1985

Prepared By

ENGINEERING-SCIENCE

57 Executive Park South, Suite 590

Atlanta, Georgia 30329

NOTICE

This report has been prepared for the United States Air Force by Engineering-Science for the purpose of aiding in the Air Force Installation Restoration Program. It is not an endorsement of any product. The views expressed herein are those of the contractor and do not necessarily reflect the official views of the publishing agency, the United States Air Force, nor the Department of Defense.

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EXECUTIVE SUMMARY

The Department of Defense (DOD) has developed a program to identify and evaluate past hazardous and potentially hazardous waste material disposal sites on DOD property, to control the migration of hazardous contaminants, and to control hazards to health or welfare that may result from these past disposal operations. This program is called the Installation Restoration Program (IRP). The IRP has four phases consisting of Phase I, Installation Assessment/Records Search; Phase II, Confirmation/Quantification; Phase III, Technology Base Development; and Phase IV, Operations/Remedial Actions. Engineering-Science (ES) was retained by the United States Air Force to conduct the Phase I, Initial Assessment/Records Search for Scott AFB under Contract No. F08637-84-R0040.

INSTALLATION DESCRIPTION

Scott Air Force Base is located in western Illinois, about 20 miles southeast of St. Louis, Missouri. The base is bordered by agricultural land on all sides.

The base comprises 2,503 acres of U.S. government-owned and easement land. Remote installation facilities consist of the following:

- TACAN Site . . . . 0.14 acre
- Radio Relay Site . . . . 29.82 acres
- MARS Facility (Plum Hill). . . . . 5.78 acres
- Turkey Hill Site (leased part of former site) 0.087 acres
- St. Louis Air Force Station. . . . . 67 acres

Scott Air Force Base was activated in September, 1917, as a base for training airplane pilots for wartime service. It is among the oldest continuous service Air Force installations. Between the two world wars, Scott AFB was a center for lighter-than-air aircraft and for airship and balloon pilot training. During the 1930's the base became a center for communications training, and retained this mission through World War II. In 1957, the Military Airlift Transport Service (presently Military Airlift Command, or MAC) transferred headquarters to Scott AFB, where it remains today.

ENVIRONMENTAL SETTING

The environmental setting data reviewed for this investigation identified the following points relevant to Scott AFB:

- The mean annual precipitation is 39.1 inches and net precipitation (total precipitation minus evaporation) is calculated to be 3.1 inches.
- Flooding is not normally a problem at the base. Its occurrence is normally confined to the zone adjacent to Ash Creek and the Silver Creek lowland.
- Base surface soils are predominantly fine-grained, low to moderately low permeability silts and clays.
- Shallow aquifers (alluvium in Silver Creek valley and sand strata within glacial deposits) underlie the base at shallow depths, 20 feet or less below grade. The depth to a permanent water table in these units is probably within the range of 1 to 15 feet below land surface.
- Most of the base possibly is located in the recharge zone for these shallow aquifers.
- The shallow aquifers are utilized as a limited source of water supply by domestic and agricultural consumers near the base. The aquifers are of limited extent and are not regionally significant.
- A bedrock aquifer underlies the shallow units. It is also of limited usefulness. A few local consumers utilize this aquifer.
- Water quality in base surface waters normally meets the established criteria for the Illinois General Use classification.

- No threatened or endangered species of plants or animals are known to be in residence at Scott AFB. However, the Silver Creek floodplain forest may provide suitable habitat for such species and for migratory waterfowl.

METHODOLOGY

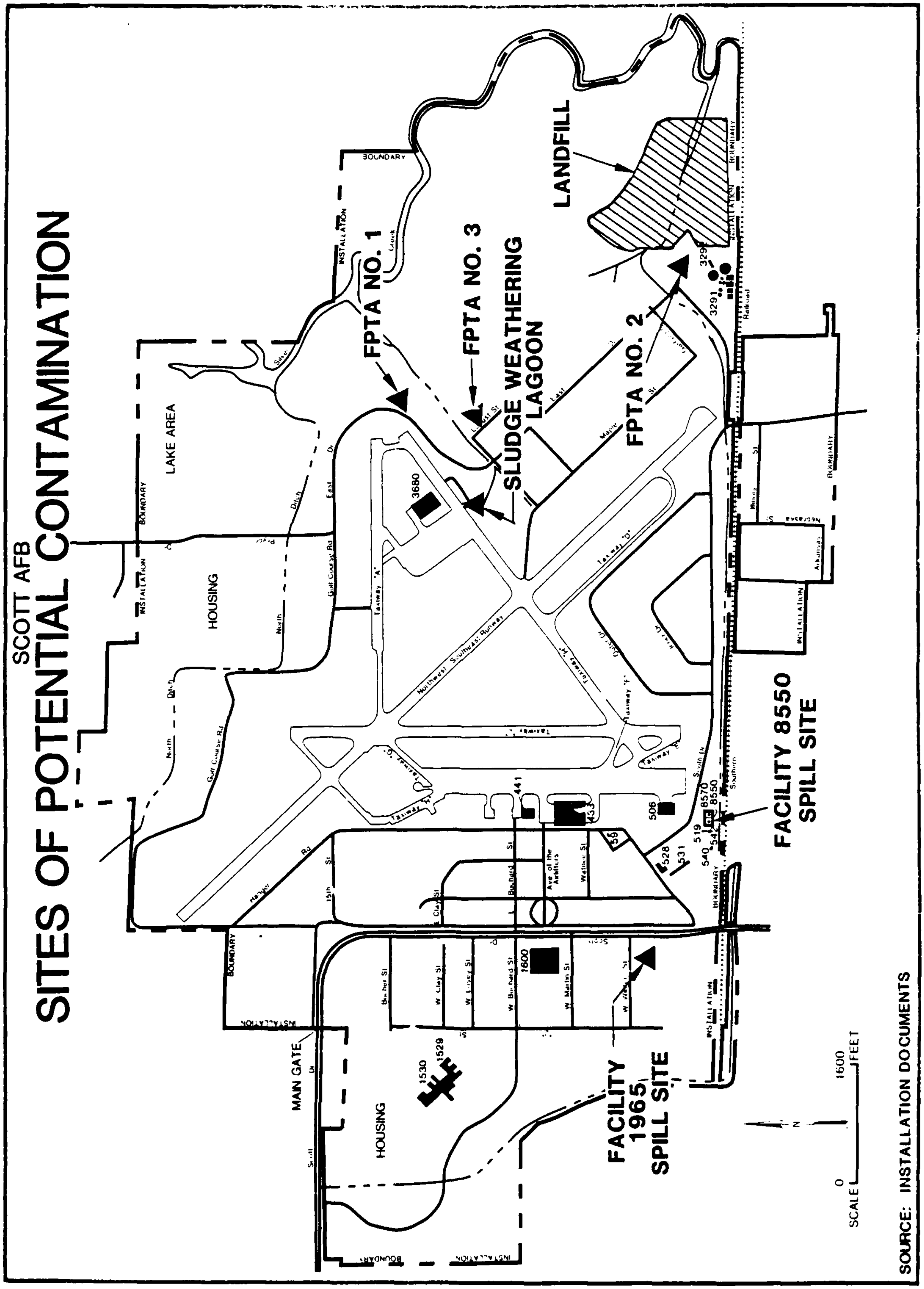
During the course of this project, interviews were conducted with installation personnel (past and present) familiar with past waste disposal practices; file searches were performed for past hazardous waste activities; interviews were held with local, state and federal agencies; and field surveys were conducted at suspected past hazardous waste activity sites. Seven sites (Figure 1) were initially identified as potentially containing hazardous contaminants and having the potential for contaminant migration resulting from past activities. These sites have been assessed using a Hazard Assessment Rating Methodology (HARM) which takes into account factors such as site characteristics, waste characteristics, potential for contaminant migration and waste management practices. The details of the rating procedure are presented in Appendix G and the results of the assessment are given in Table 1. The rating system is designed to indicate the relative need for follow-up investigation.

FINDINGS AND CONCLUSIONS

The following conclusions have been developed based on the results of the project team field inspection, reviews of base records and files, interviews with base personnel, and evaluations using the HARM system.

The areas found to have sufficient potential to create environmental contamination are as follows:

- Fire Protection Training Area No. 2
- Landfill
- Fire Protection Training Area No. 1
- Facility 8550 Spill Site



SCOTT AFB
SITES OF POTENTIAL CONTAMINATION

SOURCE: INSTALLATION DOCUMENTS

TABLE 1
SITES EVALUATED USING THE
HAZARD ASSESSMENT RATING METHODOLOGY
SCOTT AFB

Rank	Site	Operation Period	HARM Score(1)
1	Fire Protection Training Area No. 2	1953-1969	76
2	Landfill	Early 1940's-Present	73
3	Fire Protection Training Area No. 1	1942-1952	66
4	Facility 8550 Spill Site	1977	62
5	Fire Protection Training Area No. 3	1969-Present	59
6	Facility 1965 Spill Site	Mid 1970's	52
7	Sludge Weathering Lagoon	1975-1981	47

(1) This ranking was performed according to the Hazard Assessment Rating Methodology (HARM) described in Appendix G. Individual rating forms are in Appendix H.

- Fire Protection Training Area No. 3
- Facility 1965 Spill Site
- Sludge Weathering Lagoon

RECOMMENDATIONS

Recommended guidelines for future land use restrictions at the disposal sites are presented in Section 6. A program for proceeding with Phase II and other IRP activities at Scott AFB is also presented in Section 6. The recommended actions include a soil boring, monitoring well, sampling and analysis program to determine if contamination exists. This program may be expanded to define the extent and type of contamination if the initial step reveals contamination. The Phase II recommendations are summarized in Table 2.

TABLE 2
RECOMMENDED MONITORING PROGRAM FOR PHASE II IRP
AT SCOTT AFB

Site (Rating Score)	Recommended Monitoring Program
1. Fire Protection Training Area No. 2 (76)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install four wells based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.
2. Landfill (73)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install ten wells at selected locations around the facility, based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.
3. Fire Protection Training Area No. 1 (66)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install four wells based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.
4. Facility 8550 Spill Site (62)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install four wells, based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.
5. Fire Protection Training Area No. 3 (59)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install four wells, based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.

TABLE 2
RECOMMENDED MONITORING PROGRAM FOR PHASE II IRP
AT SCOTT AFB
(Continued)

	Site (Rating Score)	Recommended Monitoring Program
6.	Facility 1965 Spill Site (52)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install four wells, based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.
7.	Sludge Weathering Lagoon (47)	Conduct geophysical survey to determine depth to ground-water. Locate soil boring (four at each site) within site boundary. Analyze site for parameters listed in Table 6.2.

Source: Engineering-Science

SECTION 1

INTRODUCTION

BACKGROUND AND AUTHORITY

The United States Air Force, due to its primary mission of defense of the United States, has long been engaged in a wide variety of operations dealing with toxic and hazardous materials. Federal, state, and local governments have developed strict regulations to require that disposers identify the locations and contents of past disposal sites and take action to eliminate hazards in an environmentally responsible manner. The primary Federal legislation governing disposal of hazardous waste is the Resource Conservation and Recovery Act (RCRA) of 1976, as amended. Under Section 6003 of the Act, Federal agencies are directed to assist the Environmental Protection Agency (EPA) and under Section 3012, state agencies are required to inventory past disposal sites, and Federal agencies are required to make the information available to the requesting agencies. To assure compliance with these hazardous waste regulations, the Department of Defense (DOD) developed the Installation Restoration Program (IRP). The current DOD IRP policy is contained in Defense Environmental Quality Program Policy Memorandum (DEQPPM) 81-5, dated 11 December 1981 and implemented by Air Force message dated 21 January 1982. DEQPPM 81-5 reissued and amplified all previous directives and memoranda on the Installation Restoration Program. DOD policy is to identify and fully evaluate suspected problems associated with past hazardous contamination, and to control hazards to health and welfare that resulted from these past operations. The IRP is the basis for response actions on Air Force installations under the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, clarified by Executive Order 12316. CERCLA is the primary legislation governing remedial action at past hazardous waste disposal sites.

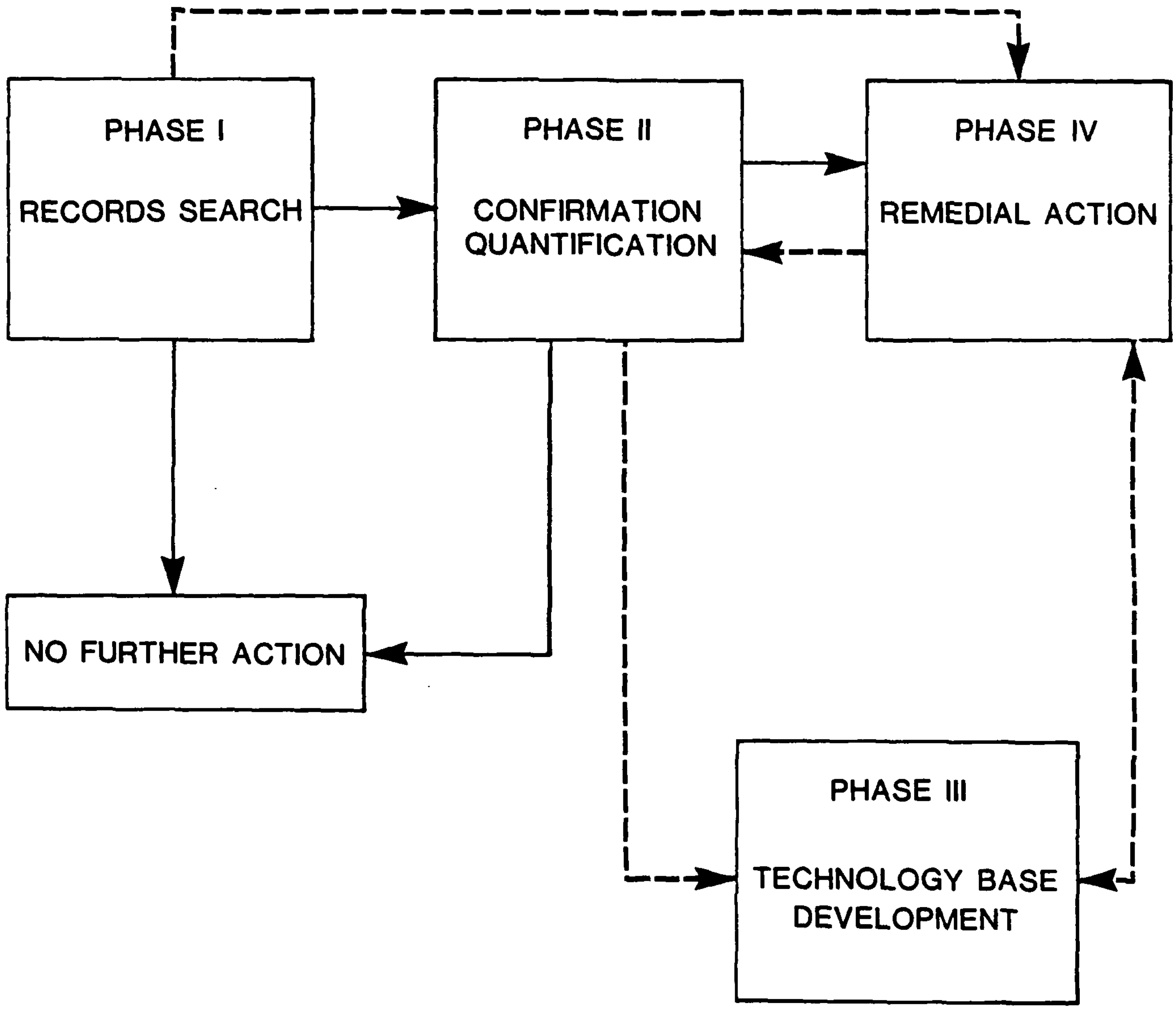
PURPOSE AND SCOPE

The Installation Restoration Program is a four-phased program (Figure 1.1) designed to assure that identification, confirmation/quantification, and remedial actions are performed in a timely and cost-effective manner. Each phase is briefly described below:

- Phase I - Installation Assessment/Records Search - Phase I is to identify and prioritize those past disposal sites that may pose a hazard to public health or the environment as a result of contaminant migration to surface or ground waters, or have an adverse effect by its persistence in the environment. In this phase, it is determined whether a site requires further action to confirm an environmental hazard or whether it may be considered to present no hazard at this time. If a site requires immediate remedial action, such as removal of abandoned drums, the action can proceed directly to Phase IV. Phase I is a basic background document for the Phase II study.
- Phase II - Confirmation/Quantification - Phase II is to define and quantify, by preliminary and comprehensive environmental and/or ecological survey, the presence or absence of contamination, the extent of contamination, waste characterization (when required by the regulatory agency), and to identify sites or locations where remedial action is required in Phase IV. Research requirements identified during this phase will be included in the Phase III effort of the program.
- Phase III - Technology Base Development - Phase III is to develop a sound data base upon which to prepare a comprehensive remedial action plan. This phase includes implementation of research requirements and technology for objective assessment of adverse effects. A Phase III requirement can be identified at any time during the program.
- Phase IV - Operations/Remedial Actions - Phase IV includes the preparation and implementation of the remedial action plan.

Engineering-Science (ES) was retained by the United States Air Force to conduct the Phase I Records Search at Scott AFB under Contract

U.S. AIR FORCE INSTALLATION RESTORATION PROGRAM



SOURCE: AFESC

No. F08637-84-R0040. This report contains a summary and an evaluation of the information collected during Phase I of the IRP and recommended follow-on actions. The land area included as part of the Scott AFB study is as follows:

-	Main Base Site	2,503 Acres
-	TACAN Site	0.14 Acres
-	Radio Relay Site	29.82 Acres
-	MARS Facility (Plum Hill)	5.78 Acres
-	Turkey Hill Site (leased portion of former site)	0.087 Acres
-	St. Louis Air Force Station	67 Acres

The activities performed as a part of the Phase I study scope included the following:

- Review of site records
- Interviews with personnel familiar with past generation and disposal activities
- Survey of types and quantities of wastes generated
- Determination of current and past hazardous waste treatment, storage, and disposal activities
- Description of the environmental setting at the base
- Review of past disposal practices and methods
- Reconnaissance of field conditions
- Collection of pertinent information from federal, state and local agencies
- Assessment of the potential for contaminant migration
- Development of recommendations for follow-on actions

ES performed the on-site portion of the records search during December, 1984. The following team of professionals were involved:

- E. H. Snider, P.E., Chemical Engineer and Project Manager, 8 years of professional experience.

- J. R. Butner, Environmental Scientist, 5 years of professional experience.
- R. M. Palazzolo, Environmental Engineer, 3 years of professional experience.
- J. R. Absalon, Hydrogeologist, 10 years of professional experience.

More detailed information on these four individuals is presented in Appendix A.

METHODOLOGY

The methodology utilized in the Scott AFB Records Search began with a review of past and present industrial operations conducted at the base. Information was obtained from available records such as shop files and real property files, as well as interviews with 89 past and present base employees from various operating areas. Those interviewed included current and past personnel associated with civil engineering, pavements and grounds maintenance, fire protection, real property, history, industrial shops, Defense Property Disposal Office, and Supply. A listing of interviewee positions with approximate years of service is presented in Appendix B.

Concurrent with the employee interviews, the applicable federal, state and local agencies were contacted to obtain pertinent study area related environmental data. The agencies contacted are listed below and in Appendix B.

- o US Environmental Protection Agency, RCRA/Hazardous Waste Enforcement Section
- o Illinois State Geological Survey
- o Illinois State Water Survey, Groundwater Section
- o Illinois Environmental Protection Agency, Division of Public Water Supplies
- o Illinois Environmental Protection Agency, Division of Water Pollution Control

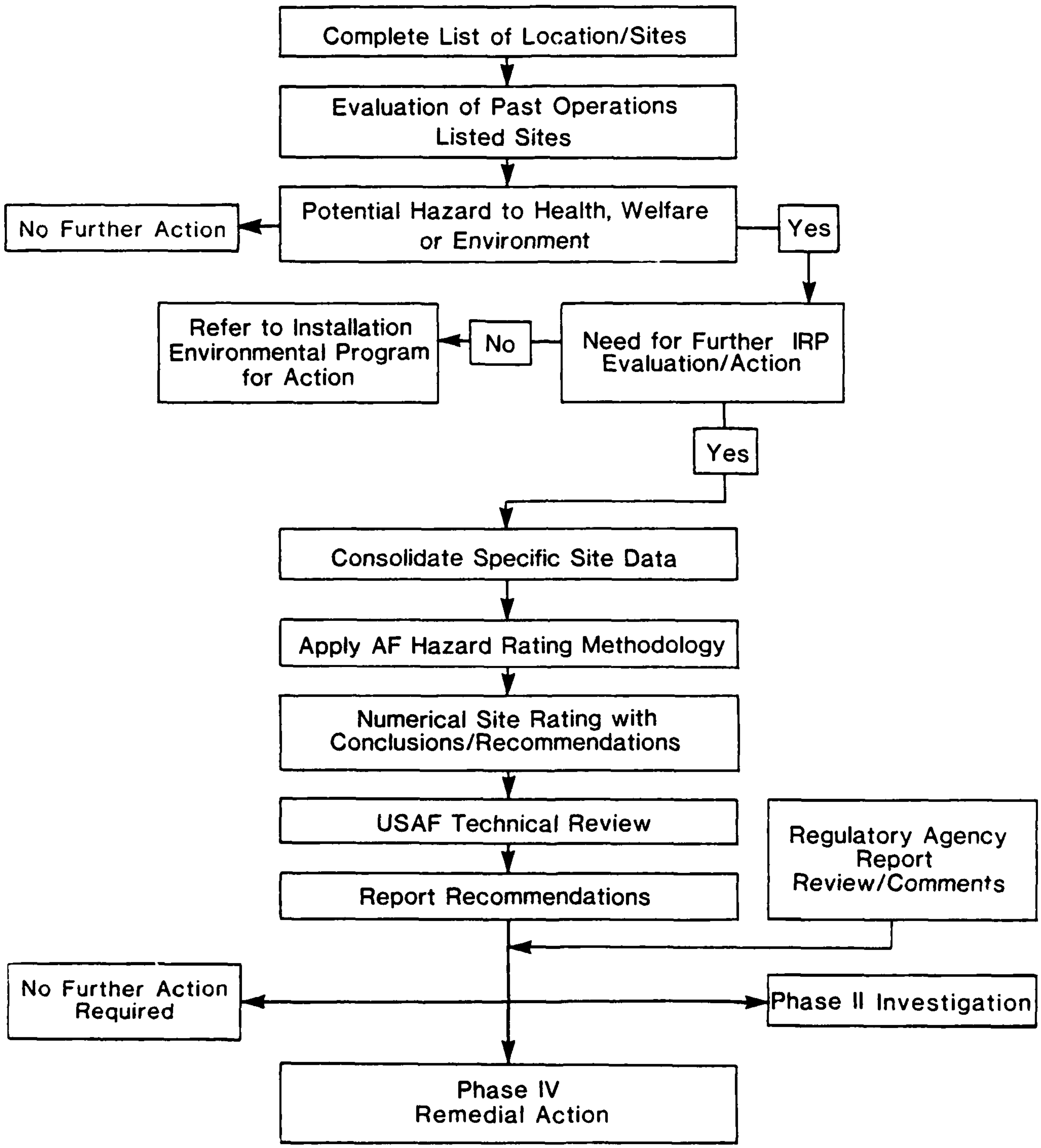
The next step in the activity review was to identify all sources of hazardous waste generation and to determine the past management practices regarding the use, storage, treatment, and disposal of hazardous materials from the various sources on the base. Included in this part of the activities review was the identification of all known past disposal sites and other possible sources of contamination such as spill areas.

A general ground tour of the identified sites was made by the ES Project Team to gather site-specific information including: (1) general observations of existing site conditions; (2) visual evidence of environmental stress; (3) presence of nearby drainage ditches or surface waters; and (4) visual inspection of these water bodies for any obvious signs of contamination or leachate migration. No helicopter reconnaisance was made due to inclement weather.

A decision was then made, based on all of the above information, whether a potential hazard to health, welfare or the environment exists at any of the identified sites using the Flow Chart shown in Figure 1.2. If no potential existed, the site was deleted from further consideration. For those sites where a potential hazard was identified, a determination of the need for IRP evaluation/action was made by considering site-specific conditions. If no further IRP evaluation was determined necessary, then the site was referred to the installation environmental program for appropriate action. If a site warranted further investigation, it was evaluated and rated using the Hazard Assessment Rating Methodology (HARM). The HARM score indicates the relative potential for adverse effects on health or the environment at each site evaluated.

PHASE I INSTALLATION RESTORATION PROGRAM

RECORDS SEARCH FLOW CHART



Source: AFESC

SECTION 2

INSTALLATION DESCRIPTION

LOCATION, SIZE AND BOUNDARIES

Scott Air Force Base is located in western Illinois, about 20 miles southeast of St. Louis, Missouri. The base is bordered by agricultural land on all sides (see Figures 2.1 and 2.2).

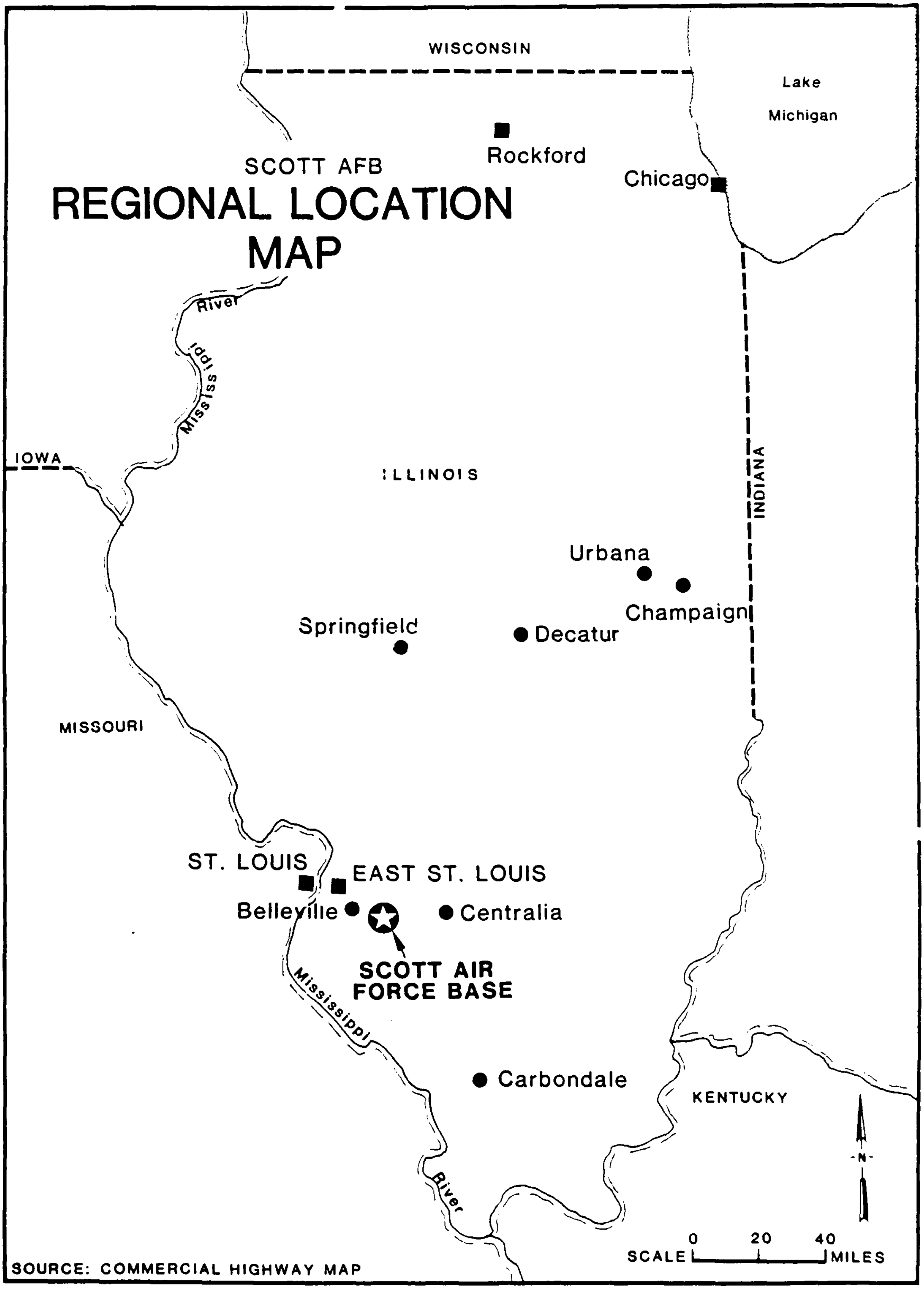
The base comprises 2,503 acres of U.S. government-owned and easement land (See Figure 2.3). Remote installation facilities consist of the following:

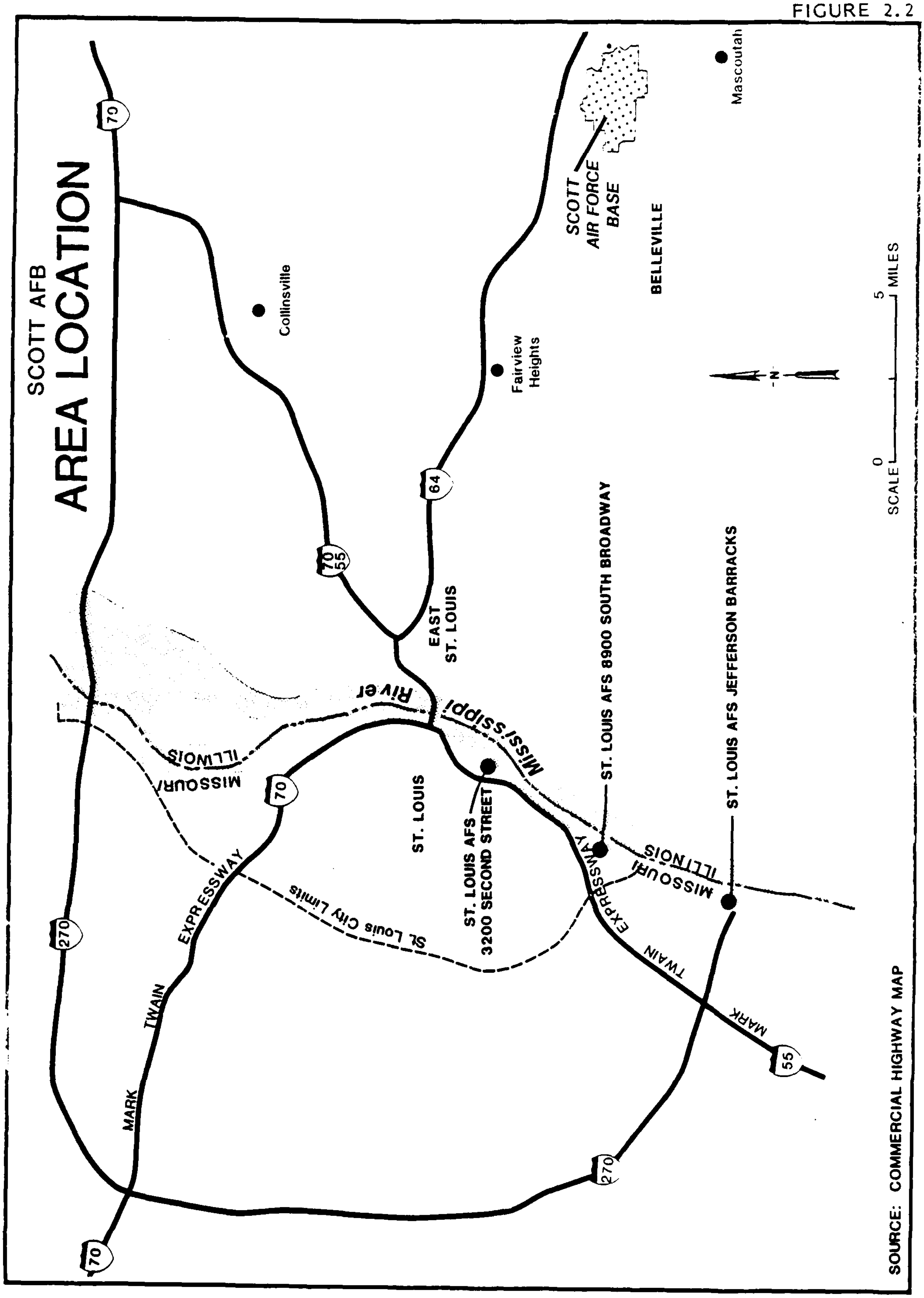
- TACAN Site . . . . 0.14 acre
- Radio Relay Site . . . . 29.82 acres
- MARS Facility (Plum Hill). . . . . 5.78 acres
- Turkey Hill Site (leased part of former site) 0.087 acres
- St. Louis Air Force Station. . . . . 67 acres

BASE HISTORY

Scott Air Force Base was established in 1917 with a wartime mission of training airplane pilots. In 1920, Scott Field was designated a lighter-than-air station, with dirigible airships and balloons assigned to the field. Scott retained a few airplanes in the 1920's, but was without a regular assigned unit until the 15th Observation Squadron was assigned in the early 1930's. This assignment coincided with a slow close of lighter-than-air activities. All lighter-than-air activities were transferred from Scott by 1937.

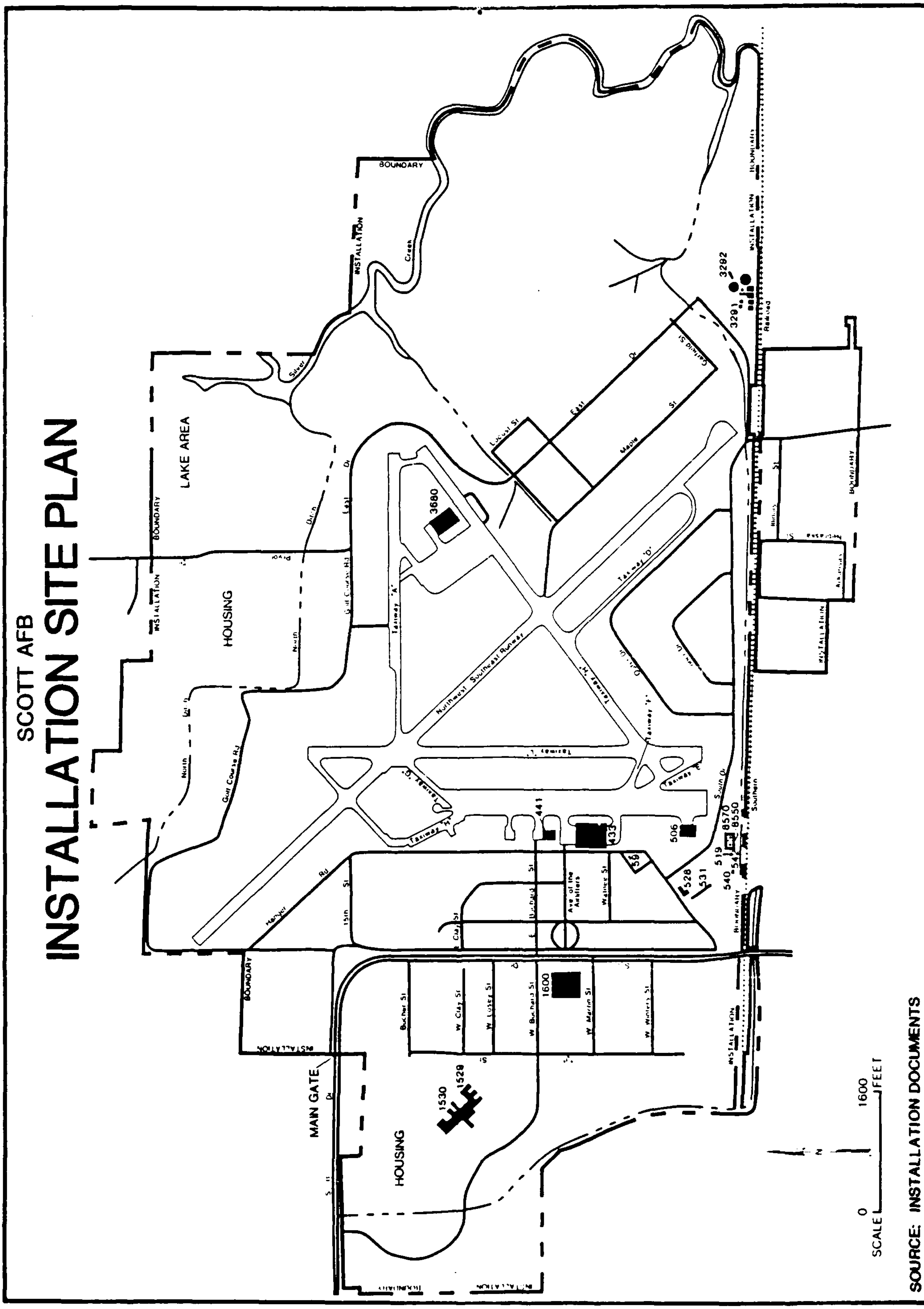
In 1938 a new construction program was begun, and most earlier (World War I and lighter-than-air era) structures were razed. Four concrete runways were constructed during the 1940 to 1942 time. During World War II Scott was a communications training center. By the end of World War II the majority of airborne duty operators/mechanics had


WISCONSIN
Lake
Michigan
Rockford
SCOTT AFB
REGIONAL LOCATION
MAP
Chicago
River
Mississippi
IOWA
ILLINOIS
INDIANA
Urbana
Champaign
Springfield
Decatur
MISSOURI
ST. LOUIS
EAST ST. LOUIS
Belleville
Centralia
SCOTT AIR
FORCE BASE
Mississippi
Carbondale
KENTUCKY
N
River
SCALE 0 20 40 MILES
SOURCE: COMMERCIAL HIGHWAY MAP



SOURCE: COMMERCIAL HIGHWAY MAP

FIGURE 2.3



SCOTT AFB
INSTALLATION SITE PLAN
LAKE AREA
HOUSING
HOUSING
MAIN GATE
INSTALLATION BOUNDARY
Northwest Southeast Runway
Taxiway 'A'
Taxiway 'D'
Taxiway 'L'
Silver Creek
Golf Course Rd
Hangar Rd
East Dr
Maple St
Locust St
South Dr
3680
3201
3282
441
433
506
8570
8550
519
540
528
531
56
1600
1530
1529
SCALE
0
1600
FEET
SOURCE: INSTALLATION DOCUMENTS

completed at least one course at Scott. Air Training Command Headquarters was transferred to Scott Air Force Base in 1949, and the base remained a training center throughout the mid-1950's.

In 1957 Scott became the headquarters installation for the Military Air Transport Service (now Military Airlift Command, MAC). Units transferred to Scott concurrently included headquarters of the Air Weather Service, Aerospace Rescue and Recovery Service, and the Air Force Communications Service. In 1964 the 1405th Aeromedical Transport Wing was established at Scott; this unit has an expanded mission and is now the 375th Aeromedical Airlift Wing. In 1975 a further consolidation of airlift functions resulted in assignment of approximately 30 Air Force Reserve and Air National Guard units in the responsibility of the 375th Aeromedical Airlift Wing. Current activities include worldwide cargo, troop, and patient airlift, weather and rescue-recovery services, and western hemisphere telephonic communications.

ORGANIZATION AND MISSION

The host unit at Scott Air Force Base is the 375th Air Base Group. The mission of the 375th Air Base Group is to operate, administer, and maintain Scott Air Force Base and to support assigned organizations and facilities. A major assigned unit at Scott Air Force Base is the 375th Aeromedical Airlift Wing; the major mission of this unit is to operate and maintain a worldwide aeromedical evacuation system and to provide domestic aeromedical airlift services. The Civil Engineering (CE), Consolidated Aircraft Maintenance (CAMS) and the Supply Squadron are three units within the 375th Air Base Group that have missions of importance to this report, because they are involved with the accumulation, treatment, and disposal of hazardous wastes at Scott AFB.

The tenant organizations at Scott Air Force Base are listed along with descriptions of their missions in Appendix C.

SECTION 3

ENVIRONMENTAL SETTING

The environmental setting of Scott Air Force Base is described in this section. The primary emphasis is directed toward the identification of features or conditions that may facilitate the off-base generation and migration of hazardous waste related contamination. Environmentally sensitive conditions pertinent to this study are highlighted at the end of this section.

CLIMATE

Temperature, precipitation, snowfall and other relevant climatic data furnished by Detachment 9, 7th Weather Wing, Scott Air Force Base, IL are listed in Table 3.1. The period of record is 43 years. The summarized data indicate that mean annual precipitation is 39.1 inches. Net precipitation is calculated to be 3.1 inches, based on National Oceanographic and Atmospheric Administration data (NOAA, 1983). Net precipitation is equal to the total precipitation less evaporation. The net precipitation is an estimate of the amount of meteoric water potentially available for infiltration into the subsurface. The one-year, twenty-four hour rainfall for the study area is approximately three inches interpolated from data published by USDC,WB (1961). This moderate value suggests that a potential for the development of erosion exists.

GEOGRAPHY

The study area lies on the Springfield Plain subdivision of the Till Plains Section of the Central Lowlands Physiographic Province (Figure 3.1). The Springfield Plain is a generally level upland typically lacking prominent surficial features. Minor expressions of glacial topography such as the band of low ridges and mound-shaped hills

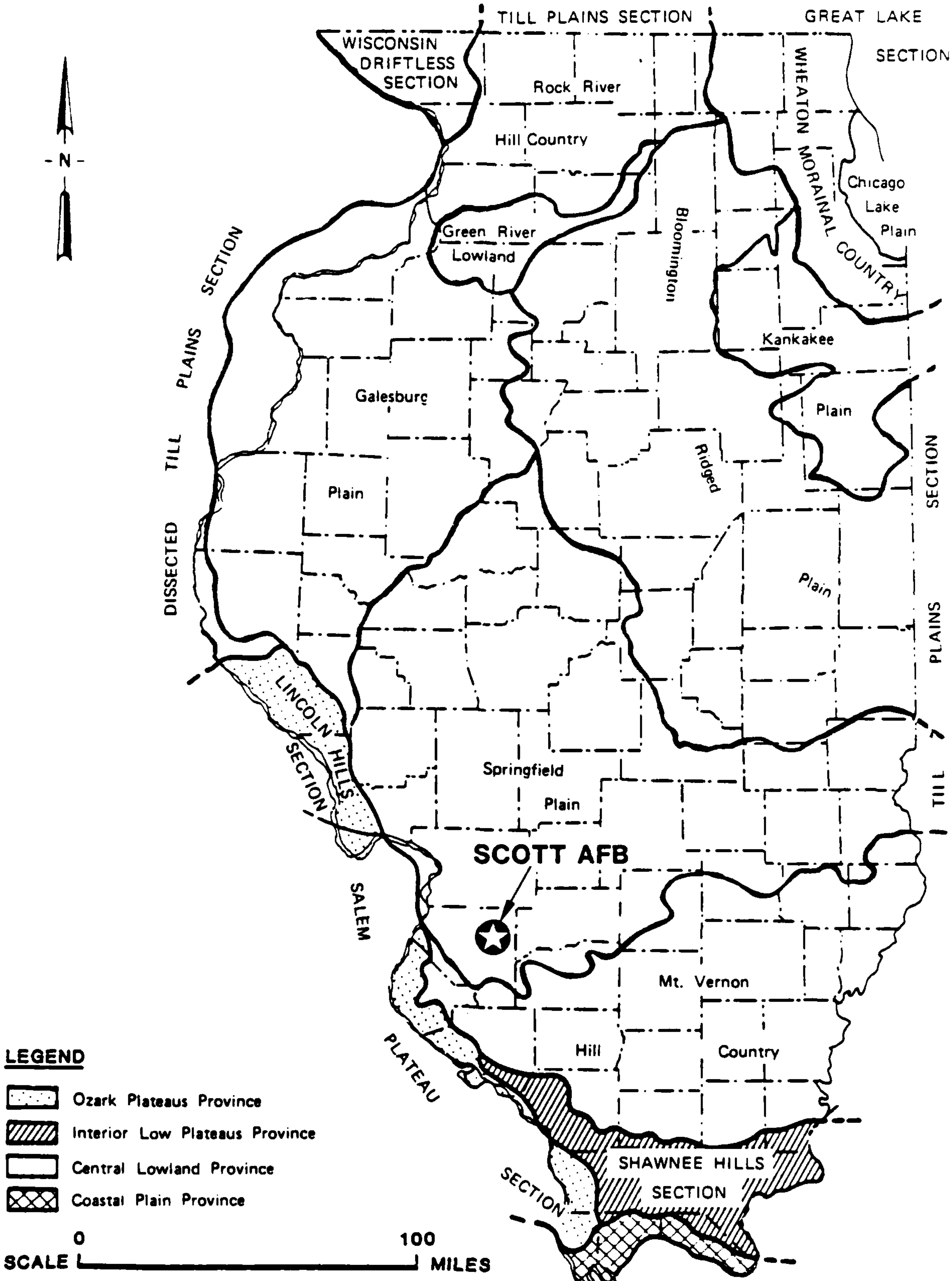
TABLE 3.1
SCOTT AFB CLIMATOLOGICAL DATA

MONTH	Temperature (°F)					Precipitation (In)				Snowfall (In)		
	Mean			Extreme		Monthly			Max	Monthly		Max
	Daily		Monthly									
	Max	Min		Max	Min	Mean	Max	Min	24 Hrs	Mean	Max	24 Hrs
JAN	38	22	36	75	-19	2.2	8.9	#	3.6	5	23	7
FEB	43	26	35	81	-11	2.3	6.2	#	2.8	4	14	12
MAR	53	34	44	85	-3	3.6	10.0	#	2.5	4	20	7
APR	66	46	56	90	22	3.9	9.4	.0	2.9	1	17	10
MAY	75	55	65	97	29	3.9	9.9	#	3.5	0	0	0
JUN	85	64	75	104	44	4.2	17.2	#	8.2	0	0	0
JUL	89	68	78	110	48	3.7	11.6	.0	5.5	0	0	0
AUG	87	68	76	104	44	3.8	21.1	.0	9.2	0	0	0
SEP	80	56	69	103	27	3.2	9.5	.0	3.6	0	0	0
OCT	70	47	58	95	24	2.6	6.8	.0	2.6	#	#	#
NOV	54	35	45	84	4	3.0	10.0	.0	6.7	2	13	10
DEC	43	27	35	75	-7	2.7	8.6	.0	3.2	3	23	14
ANN	65	46	56	110	-19	39.1	21.1	.0	9.2	19	23	14
EYR	43	43	43	43	43	43	43	43	43	75	35	35

SOURCE: Detachment 9, 7th Weather Wing, Scott AFB, IL

NOTE: Note: # indicates trace accumulations.

SCOTT AFB
PHYSIOGRAPHIC DIVISIONS



SOURCE: REINERTSEN, ET AL., 1977

extend across St. Clair County from southwest to northeast. Local relief is usually the result of erosional activity or stream channel development.

Topography

The installation land surface appears to be generally level with little spatial variation apparent. Base surface elevations range from 510 feet, National Geodetic Vertical Datum of 1929 (NGVD), to 419 feet NGVD in the Silver Creek flood plain east of the Small Arms Range, facility 6150.

Drainage

The drainage of installation land areas is accomplished by overland flow to diversion structures and drainage ditches and finally to local surface streams. Drainage originating from the vicinity of Officer Housing West is directed to Ash Creek, along the west installation boundary. Drainage flowing from the base administrative and industrial areas is directed to the South Ditch which flows to Silver Creek. Drainage originating from the golf course, NCO housing, the recreation area and the north part of the airfield is directed to North Ditch and thence to Silver Creek. Runoff flowing from the central and south parts of the airfield is directed to the Runway Drainage Ditch and finally to Silver Creek. Runoff flowing from the southeast corner of the installation is directed to Mosquito Creek and thence to Silver Creek. Installation surface drainage features are depicted on Figure 3.2.

The lowlands adjacent to Silver Creek flood periodically. While the physical limits of such flooding relative to Scott Air Force Base have not been determined, a study performed by the Corps of Engineers (1977) calculated the probable elevations to which flood waters could rise, based upon then-extant hydrologic and topographic conditions. The elevations are summarized on Table 3.2. The reference to "south installation" and "north installation" indicates that section of the base boundary either crossing or immediately adjacent to Silver Creek.

Minor flooding may occur in the zone adjacent to Ash Creek due to backwater flooding.

Historical data cited by the Corps of Engineers (1977) note that large portions of the base were inundated during the major climatic events of August 1946 and June 1957.

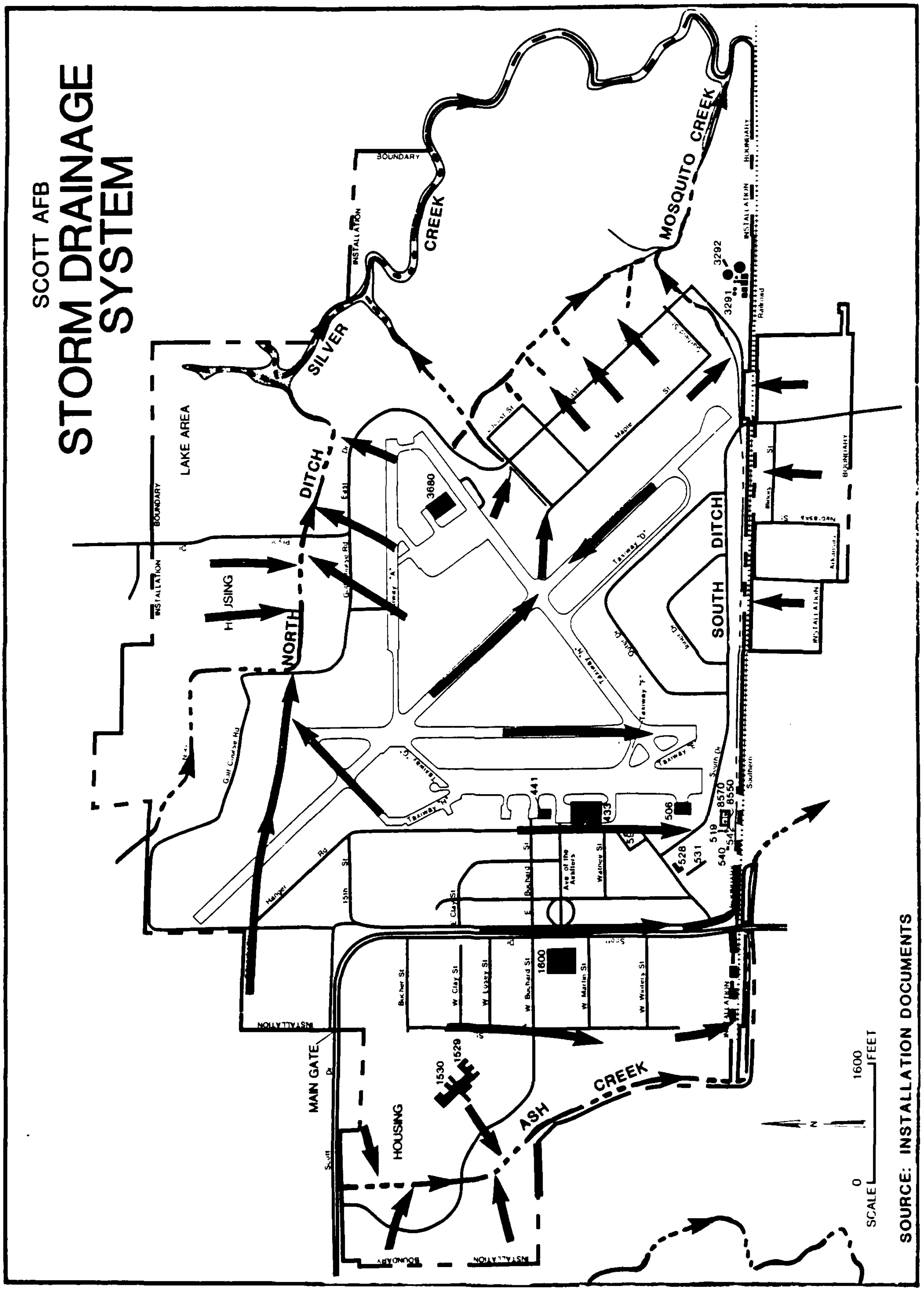

SCOTT AFB
STORM DRAINAGE
SYSTEM
LAKE AREA
SILVER
CREEK
MOSQUITO CREEK
NORTH
DITCH
SOUTH
DITCH
HOUSING
HOUSING
ASH
CREEK
MAIN GATE
INSTALLATION
BOUNDARY
3680
1600
441
433
506
528
531
519
540
8570
8550
3291
3292
1530
1529
Taxiway "A"
Taxiway "D"
Maple
15th St
Hanger Rd
W Clay St
W Losey St
W Bucherd St
W Martin St
W Walters St
Bucher St
South Dr
Southern
Railroad
SCALE
0
1600
FEET
SOURCE: INSTALLATION DOCUMENTS

TABLE 3.2
SCOTT AIR FORCE BASE
POTENTIAL FLOOD ELEVATIONS
ALONG SILVER CREEK

Event	South Installation Avg. Elevation (Feet)	North Installation Avg. Elevation (Feet)
Standard Project Flood	427.5	430
100 year	423.8	425
25 year	420.8	422
10 year	419.5	421
Annual	416	417

Source: Corps of Engineers, 1977. Report for Flood Control and Allied Purposes Silver Creek, Illinois. U.S. Army Engineer District, St. Louis, MO. Flood Control Profile of Silver Creek, Plates 6 and 7.

Note: The elevations are referenced to Mean Sea level.

TABLE 3.3
SCOTT AIR FORCE BASE SOILS

Map Symbol	Unit Description	USDA Texture (Major Fraction)	Thickness (Inches)	Unified Classification (Major Fraction)	Unit Permeability (Inches/Hour)	Possible Disposal Facility Use Constraints
41A	Muscatine silt loam, 0-3 percent slopes	Silt loam, silty clay loam	60	CL, CL-ML	0.6-2.0	Severe; water table 2-5 ft[(1)]
50	Virden silt loam	Silt loam, silty clay, Silty clay loam	60	CL, CH	0.2-2.0	Severe; water table 0-2 ft Occasionally floods
61A	Atterberry silt loam, 0-3 percent slopes	Silt loam, silty clay loam	60	C[illegible] CH, CL-ML	0.2-2.0	Severe; water table 1-3 ft
68	Sable silty clay loam	Silt loam, silty clay loam	60	CL, [illegible] CH	0.2-2.0	Severe; water table 0-2 ft Occasionally floods
108	Bonnie silt loam	Silt loam	60	CL, ML	0.06-2.0	Severe; water table 0-3 ft Frequently floods
280B	Payette silt loam, 2-4 percent slopes	Silt loam, silty clay loam	60	CL, CL-ML	0.6-2.0	None; water table >6 ft
280B2	Payette silt loam, 3-6 percent slopes; eroded	Silt loam, silty clay loam	60	CL, CL-ML	0.6-2.0	None; water table >6 ft
280C2	Payette silt loam, 6-12 percent slopes; eroded	Silt loam, silty clay loam	60	CL, CL-ML	0.6-2.0	None; water table >6 ft
308B	Alford silt loam, 1-4 percent slopes	Silt loam, silty clay loam	60	CL, CL-ML	0.6-6.0	None; water table >6 ft
308B2	Alford silt loam, 1-4 percent slopes; eroded	Silt loam, silty clay loam	60	CL, CL-ML	0.6-6.0	None; water table >6 ft
308C2	Alford silt loam, 4-10 percent slopes; eroded	Silt loam, silty clay loam	60	CL, CL-ML	0.6-6.0	None; water table >6 ft
333	Wakeland silt loam	Silt loam	60	CL, ML	0.6-2.0	Severe; water table 1-3 ft Frequently floods.
454A	Iva silt loam, 0-2 percent slopes	Silt loam, silty clay loam	60	CL, CL-ML	0.06-2.0	Severe; water table 1-3 ft
SLF	Sanitary Landfill	*	*	*	*High	Not applicable

(1) Water table expressed as water level in feet below ground surface

* Properties not estimated, but assumed to be highly variable

Note: CL= low plasticity clay; CH - high plasticity clay; ML = low plasticity silt; OH = high plasticity organic soil.

Source: USDA, Soil Conservation Service, 1978

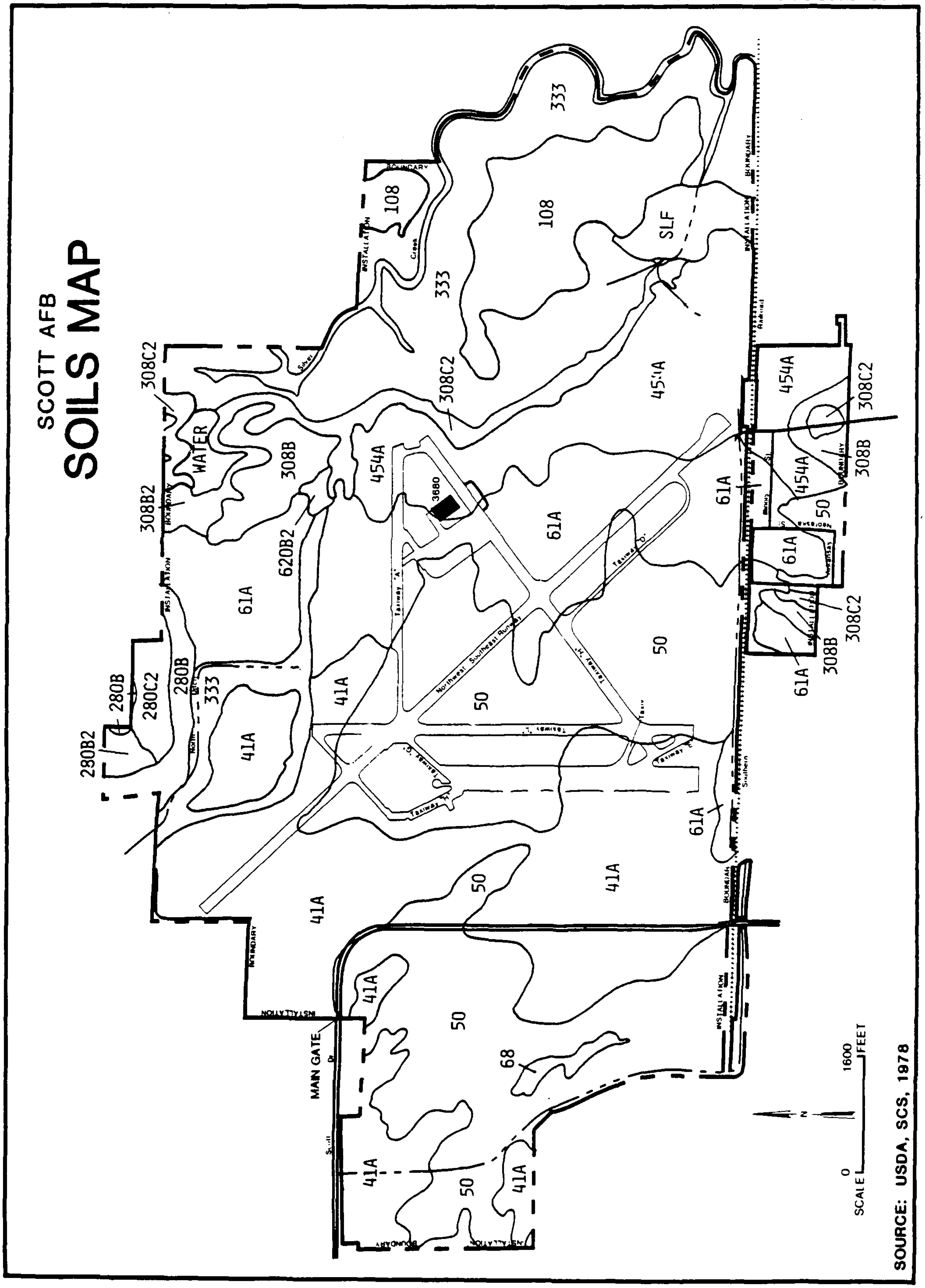
Surface Soils

The surface soils of St. Clair County have been described in a report published by the USDA Soil Conservation Service (1978). Modern soils found within the study area have formed over loess (wind-blown silt), alluvium and in some places, glacial materials where they are exposed. Most installation soils are typically fine-grained and free-draining in the upper portion of their profile. A typical profile is 60 inches thick, measured from ground surface. Table 3.3 summarizes the principal characteristics of the 13 soil types that have been mapped within installation boundaries. A landfill area (see Figure 4.4), active during the period of time when the Soil Conservation Service was preparing these data (1974), was mapped as a separate unit in the southeast quadrant of the base. Figure 3.3 is a map of base surface soils. Seven of the soil units mapped may impose severe constraints on the possible development of waste disposal facilities, primarily due to a high water table or flooding potential. The word severe indicates that natural conditions are not amenable to the development of new waste management facilities without extensive engineering and construction modifications of the proposed site. All of the units tend to experience a seasonal high water table (less than twenty feet below ground surface) and have moderately slow to moderate permeabilities. One unit, described as "Sanitary Landfill" by the Soil Conservation Service, was not completely described in Table 3.3 as its profile has been altered, buried or completely removed locally as a result of extensive site use modifications.

GEOLOGY

Information describing the geology of the Scott Air Force Base study area has been obtained from Willman, et al. (1967); Jacobs (1971); Willman, et al. (1975) and Lineback (1979). Additional information has been obtained from installation test boring records. A brief review of the available data with pertinent comments is included in the following discussion.

The geologic units of St. Clair County include Paleozoic (major systems range from Cambrian through Pennsylvanian) sedimentary rocks and Cenozoic (Quaternary) unconsolidated materials. These units are listed


SCOTT AFB
SOILS MAP
333
108
108
SLF
333
308C2
308C2
454A
WATER
308B
454A
308B2
620B2
3680
61A
61A
61A
454A
308C2
454A
308B
50
61A
308C2
308B
61A
50
280B2
280B
280C2
280B
333
41A
41A
50
41A
61A
41A
50
41A
50
41A
68
50
41A
41A
MAIN GATE
INSTALLATION
BOUNDARY
Taxiway 'A'
Northwest Southeast Runway
SCALE 0 1600 FEET
SOURCE: USDA, SCS, 1978

in stratigraphic sequence and are briefly described in Table 3.4. The principal rock stratigraphic unit characteristic of each major chronologic series or group is listed.

Study area bedrock includes the Pennsylvanian-age Modesto and Carbondale Formations (Willman, et al., 1967). Both the Modesto and the Carbondale are composed of shale, siltstone, sandstone, thin-bedded limestone, claystone and coal. At Scott AFB, the bedrock surface dips from a high of 400 feet, mean sea level (MSL), in the northwest corner of the installation to a low of approximately 375 feet, MSL, in the southeast quadrant of the base. No faults or other major discontinuities have been mapped in the bedrock surface in the vicinity of the base.

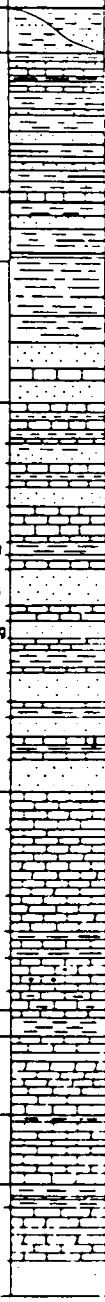
Study area surficial geology is dominated by glacial and alluvial deposits. These deposits include the Cahokia Alluvium, the Pearl Formation, the Hagarstown Member of the Glasford Formation and the Vandalia Till Member of the Glasford Formation. The total thickness of unconsolidated materials at the base may range from 50 to 60 feet. The Pearl, Hagarstown and the Vandalia are reported to be overlain by a relatively consistent layer of loess (wind-blown silt). Installation test boring records suggest that the overlying loess may be as much as 20 feet thick in the central portion of the base. Figure 3.4 is a surficial geologic map of the study area, depicting the distribution of the major unconsolidated units. The unconsolidated units present at the base include the following:

- Cahokia Alluvium. This unit consists of floodplain and channel deposits of modern rivers and streams. It is chiefly poorly sorted sand, silt and clay with local accumulations of sandy gravel. Its occurrence at Scott AFB is limited to the Silver Creek lowlands.
- Pearl Formation. This unit normally occurs as linear terrace remnants along major drainage alignments. It consists of silt, sand and gravel. It occurs through much of the central section of the base.

TABLE 3.4

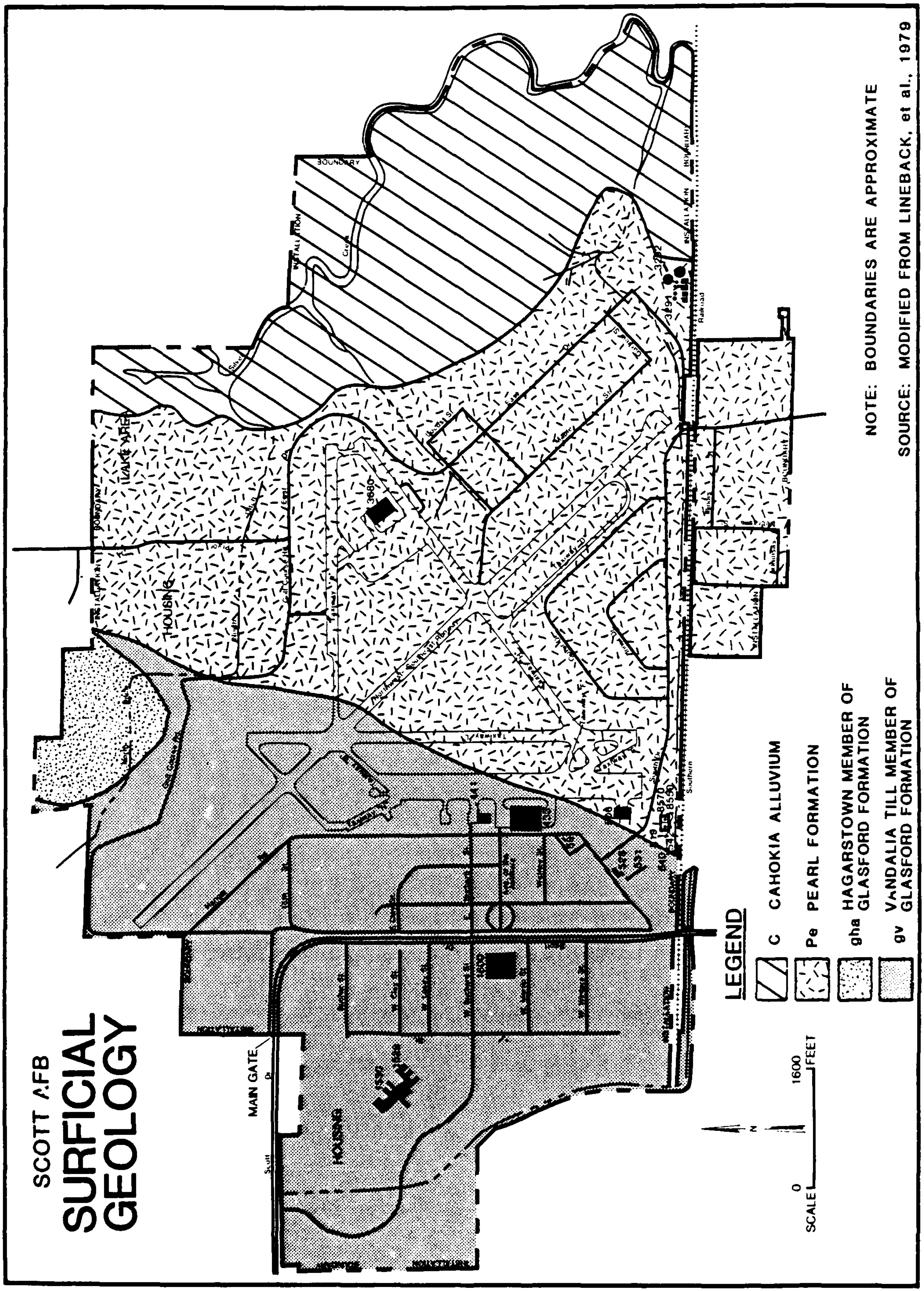
GEOLOGIC UNITS OF SOUTH - CENTRAL ILLINOIS

SYSTEM	SERIES OR GROUP THICKNESS	FORMATION	GRAPHIC LOG	ROCK TYPE	WATER-YIELDING CHARACTERISTICS; DRILLING AND WELL CONSTRUCTION DETAILS
	Pleistocene 0-200			Unconsolidated glacial deposits, windblown silt (loess), and alluvium	Thick sand and gravel deposits source of large supplies in major stream valleys. Thin upland sand and gravel deposits locally suitable for small supplies. Requires testing, screens, and development
PENNSYLVANIAN	McLeansboro 0-1000			Shale, sandstone, limestone, and coal	Water-yielding character variable. Locally shallow sandstone and creviced limestone yield small supplies. Water quality usually becomes poorer with increasing depth. May require casing
	Carbondale 0-300				
	Tradewater-Caseyville 0-1100				
MISSISSIPPIAN	Chester 0-1300	Kinkaid Degonia Clore Palestine Menard Baldwin [Waltersburg, Vienna, Tar Springs] Okaw [Glen Dean, Hardinsburg, Golconda] Ruma [Cypress] Paint Creek Yankee town [Bethel] Renault Aux Vases		Limestone, sandstone, and shale	Some sandstones, particularly Aux Vases, are important sources of groundwater in Madison, St. Clair, and Monroe counties. Limestone may yield domestic supplies. Too deep in eastern and central part of area to yield potable water. Shales may require casing
	Valmeyer 520-1500	Ste. Genevieve St. Louis Salem Warsaw Burlington-Keokuk		Limestone, dolomite, and shale	Dependable aquifer for small to medium supplies in Madison, St. Clair, and Monroe counties. St. Louis limestone particularly favorable. Crevices and solution channels may cause drilling difficulties
	Kinderhook 0-250	Fern Glen		Shale	Not water-yielding
DEVONIAN	0-200			Limestone, dolomite	May yield groundwater from joints and channels. Too deep to yield potable water.
SILURIAN	0-1000			Limestone, dolomite	
UPPER ORDOVICIAN	510±1300±	Maquoketa Kimmswick- Plattin- Joachim St. Peter		Shale, dolomite, and sandstone	Dolomite may yield water in Mississippi River flat in Monroe county. Water in St. Peter sandstone highly mineralized
LOWER ORDOVICIAN AND CAMBRIAN (extends down to crystaline basement rock)					



SOURCE: MODIFIED FROM SELKREGG, ET AL., 1957

FIGURE 3.4



SCOTT AFB
SURFICIAL GEOLOGY
LEGEND
C CAHOKIA ALLUVIUM
Pe PEARL FORMATION
gha HAGARSTOWN MEMBER OF GLASFORD FORMATION
gv VANDALIA TILL MEMBER OF GLASFORD FORMATION
SCALE 0 1600 FEET
N
MAIN GATE
HOUSING
LAKE AREA
3680
NOTE: BOUNDARIES ARE APPROXIMATE
SOURCE: MODIFIED FROM LINEBACK, et al., 1979

- Hagarstown Member of the Glasford Formation. This unit consists of well sorted and well bedded sand and gravel, cemented locally. It frequently overlies the Vandalia Till. At Scott AFB, this unit forms the south-facing flank of the ridge on which the golf course is located.
- Vandalia Till Member of the Glasford Formation. The Vandalia is described as a hard compact sandy till of clay, silt, sand and gravel with locally discrete sand and gravel layers within it. It forms the generally level plain on which the western portion of the base is constructed.

HYDROLOGY

Information describing the hydrology of the study area has been obtained from Selkregg, et al. (1957); Csallany (1966); Jacobs (1971); Emmons (1979) and Kirk, et al. (1982). Additional data were obtained from an interview with an Illinois State Water Survey hydrologist.

Ground-Water Resources

Scott Air Force Base lies in an area of western Illinois where no aquifers of regional significance exist. Several minor hydrogeologic units are present, however, and may be utilized locally as a source of potable water supplies. These units correspond to those identified in the previous discussion of study area geology and include:

- Alluvium containing sand and gravel lenses in the Silver Creek valley.
- Sand and gravel layers within the glacial deposits (includes the Pearl, Hagarstown and Vandalia).
- Sandstone or other permeable strata within local bedrock.

Precipitation is the primary source of ground water in the project area. Although a portion of rainfall is lost as runoff directed to local surface waters or as evapotranspiration, a portion is able to infiltrate downward until it reaches a level in the unconsolidated deposits where all available voids between soil particles are water-filled. Ground water tends to move from recharge areas, where water levels are highest, to discharge areas where levels are lowest. Because most of Scott AFB occupies topographically high positions, it is possible that most of the base is located in a recharge zone. Ground water moving through the relatively shallow glacial deposits may be discharged either to local surface waters as base flow or to underlying water-bearing units such as the bedrock. The actual directions of flow, flow velocities, etc. for the water-bearing units of the project area are uncertain.

The sand and gravel layers present in the Silver Creek alluvium probably represent the most prolific aquifer in the study area. Ground water is present in the unit at relatively shallow depths (1 to 3 feet) below land surface. In some places the alluvial valley exceeds one mile in width; the alluvium may be on the order of 100 feet thick in the southern extent of the valley near the Kaskaskia River confluence. Potentially large quantities of water could conceivably be pumped from this unit by properly constructed wells tapping thick sand and gravel layers. The alluvium is not widely utilized in the study area due to the fact that its occurrence is limited to a flood-prone lowland and the fact that municipal water supplies are available to local consumers.

The sand and gravel lenses present in the glacial deposits are reported to be of limited extent in the project area. They tend to range in thickness from 1 to 12 feet in the central section of Scott AFB and are almost totally enclosed in lower permeability silts and clays (glacial till). According to numerous installation test boring records, ground water occurs at shallow depths, usually in the range of 5 to 15 feet below land surface in this unit. Wells tapping this unit are typically shallow (less than 50 feet deep), large-diameter bored holes capable of supplying small quantities of water. A study performed in 1942 for the Air Force by the Illinois State Water Survey (ISWS) at Scott AFB concluded that while modest quantities of water were present in glacial deposits at the base, large volumes of water were not available. (The ISWS study utilized 27 test wells located in the airfield area). The reason for this is that the sand and gravel layers within the till tend to be localized and highly variable in thickness and permeability. The quality of water obtained from test wells was described as "marginal." A hydrogeologic cross-section reproduced from the ISWS work is presented on Figure 3.5A. The location of this cross section is indicated in Figure 3.5B. In 1953, Scott AFB installed a 20-inch diameter well tapping a sand and gravel layer in the till. The well was reported to be 63 feet deep and was located at the Wherry Housing Project. It was tested to a capacity of 104 gallons per minute. The quality of water derived from till sand and gravel layers is quite variable. In many areas it is known to contain objectionable concentrations of iron, chloride, hardness and total dissolved solids (Illinois State Water Survey file data).

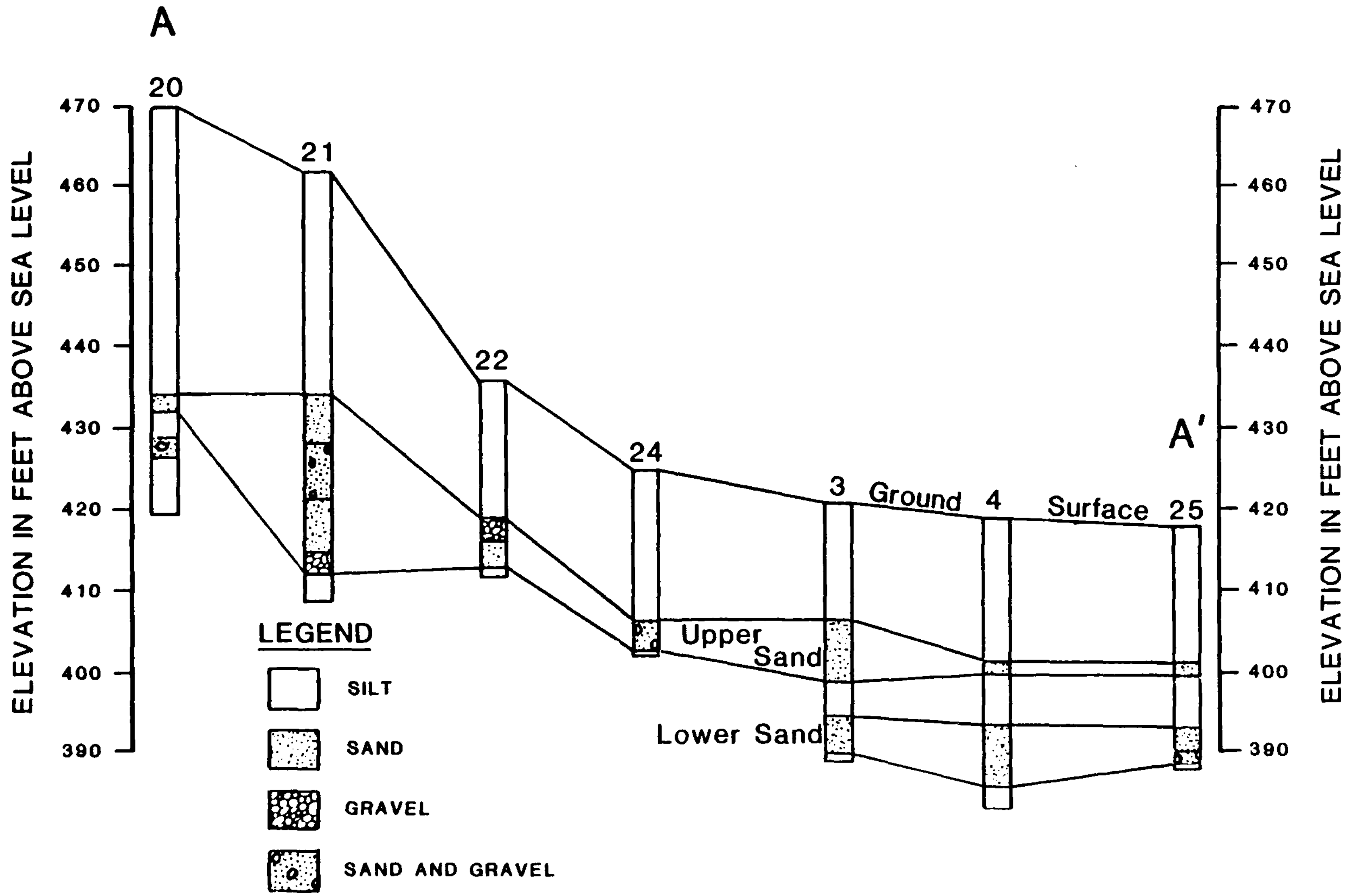
Local bedrock is a final source of ground water in the study area. Water may be contained in the numerous interconnecting fractures, fissures and cavities present in limestone, siltstone or shale, or in the available pore space of sandstone. Wells installed into local bedrock are constructed so that a sufficient number of pores, fracture, etc. are tapped to provide an adequate quantity of water. The quality of water derived from local bedrock is reported to be generally variable. Little data are available describing ground-water supplies obtained from study area bedrock as very few consumers utilize it as a source of water supplies. In 1937, Scott AFB installed a 6-inch diameter, 630-foot deep drilled well identified as "the swimming pool well" in Illinois State Water Survey files. This well was cased to a depth of 447.5 feet below grade and presumably obtained water from the 182.5 foot-long section of open hole exposing several sandstone strata. This well is no longer in use.

Water Use

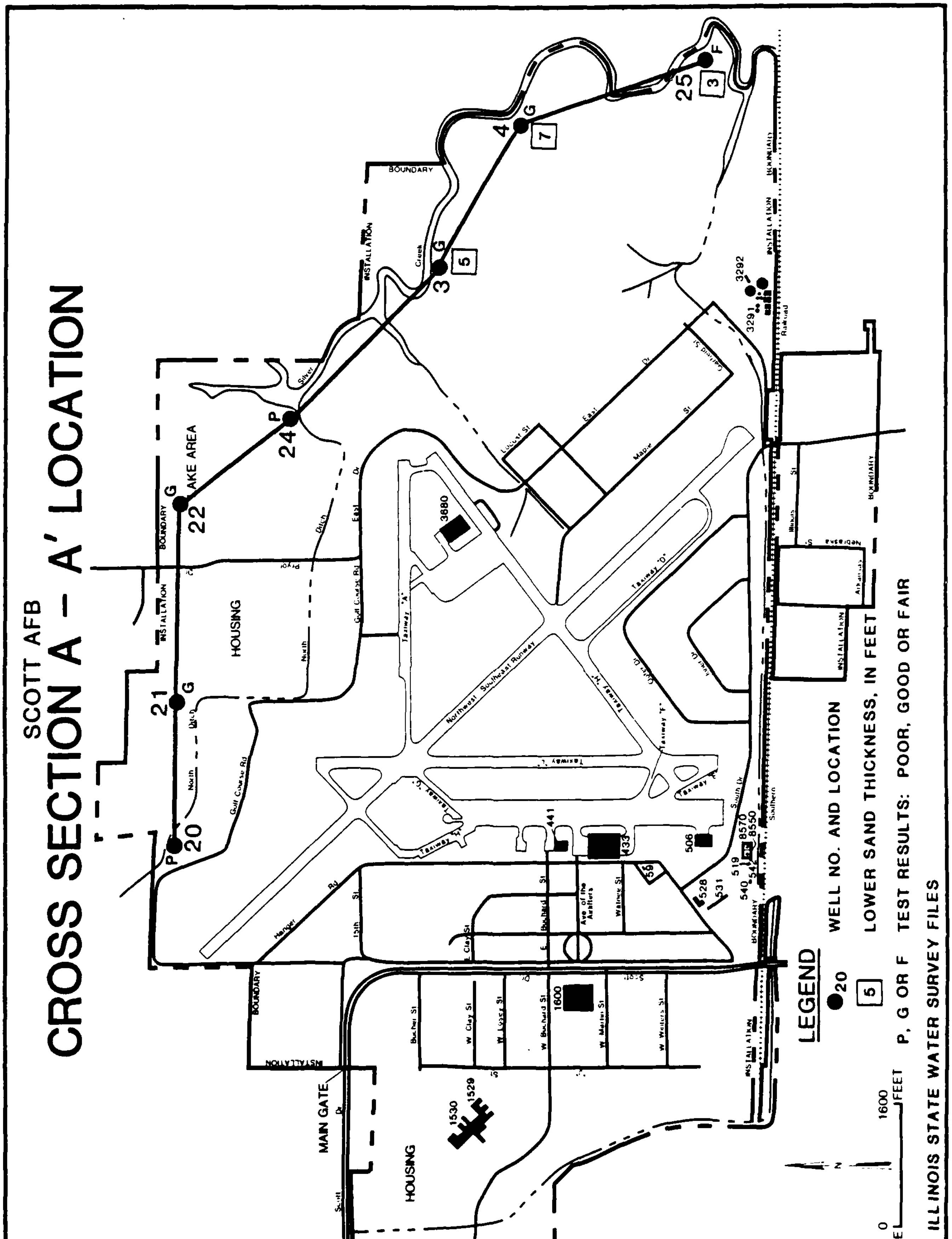
Scott Air Force Base and proximate communities purchase water supplies as needed from a municipal water distribution system. No water wells are known to be in current use on the installation (Illinois american Water Company). However, Illinois State Water Survey file data do indicate that several domestic or agricultural consumers are utilizing ground-water resources near the base. Most of the domestic consumers utilize shallow, large-diameter bored wells finished in sandy layers within the glacial deposits. A few individual wells have been completed into local bedrock at depths of more than 100 feet below grade. It is assumed that ground-water levels in the nearby wells are relatively shallow (5 to 15 feet below grade) as geologic conditions near the base

SCOTT AFB

HYDROGEOLOGIC CROSS-SECTION A - A′



SOURCE: ILLINOIS STATE WATER SURVEY FILES



ES ENGINEERING-SCIENCE

are similar to those within the installation. The available data describing wells thought to be in use near the base are summarized on Table 3.4. The estimated nearby well locations are shown on Figure 3.6. It should be noted that other wells above the 18 located on Figure 3.6 may be currently in use in the study area.

Surface-Water Resources

Essentially all installation surface drainage is directed toward Ash Creek (west) or Silver Creek (east). In addition, the installation sewage treatment plant discharges to Mosquito Creek, a tributary of Silver Creek, the ultimate receiving water. The watershed of Ash Creek upstream of the base is relatively small and consists primarily of agricultural land. The Silver Creek watershed is substantially larger and also consists chiefly of agricultural land. U.S. Geological Survey maps of the study area indicate that both Ash and Silver Creeks are perennial streams.

Intense seasonal rainfall may cause temporary localized flooding in low areas on base until such time as drainage structures and other surface features permit temporarily impounded water to dissipate. This occurrence may be especially true for the zone immediately adjacent to Ash Creek. Flooding due to high flows in Silver Creek is usually confined to the stream channel lowland. Flood levels calculated for Silver Creek were discussed earlier in this section under Drainage.

Both Ash Creek and Silver Creek are classified as "General Use" streams by the Illinois Environmental Protection Agency. This classification allows the following uses: agriculture, primary and secondary contact recreation, aquatic life propagation and most industrial uses.

Water Quality

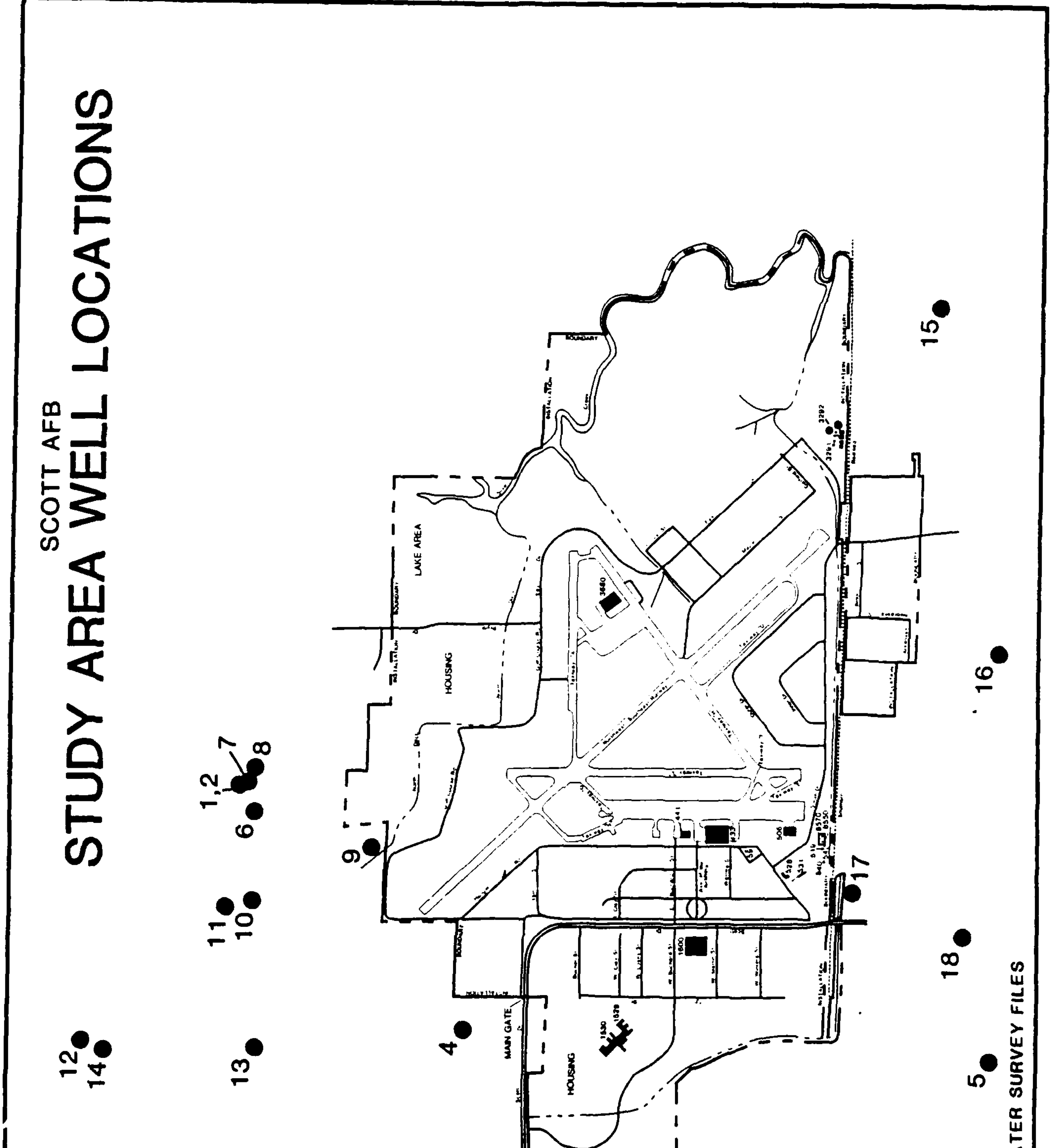
Surface water quality monitoring is performed on a quarterly basis at nine locations on Scott AFB by the base BES. Figure 3.7 depicts the surface water sampling locations. Both Ash and Silver Creeks are sampled as they enter and exit the installation. Major base drainage alignments such as the Hangar Road Ditch, North Ditch and South Ditch are also sampled. Sampling data for 1984 are included in Appendix D. Sample analytical results indicate that base surface water quality is generally within the levels required for "General Use" waters. A few excursions from the permitted concentrations of specific constituents

TABLE 3.5
SCOTT AIR FORCE BASE
LOCAL WELL DATA

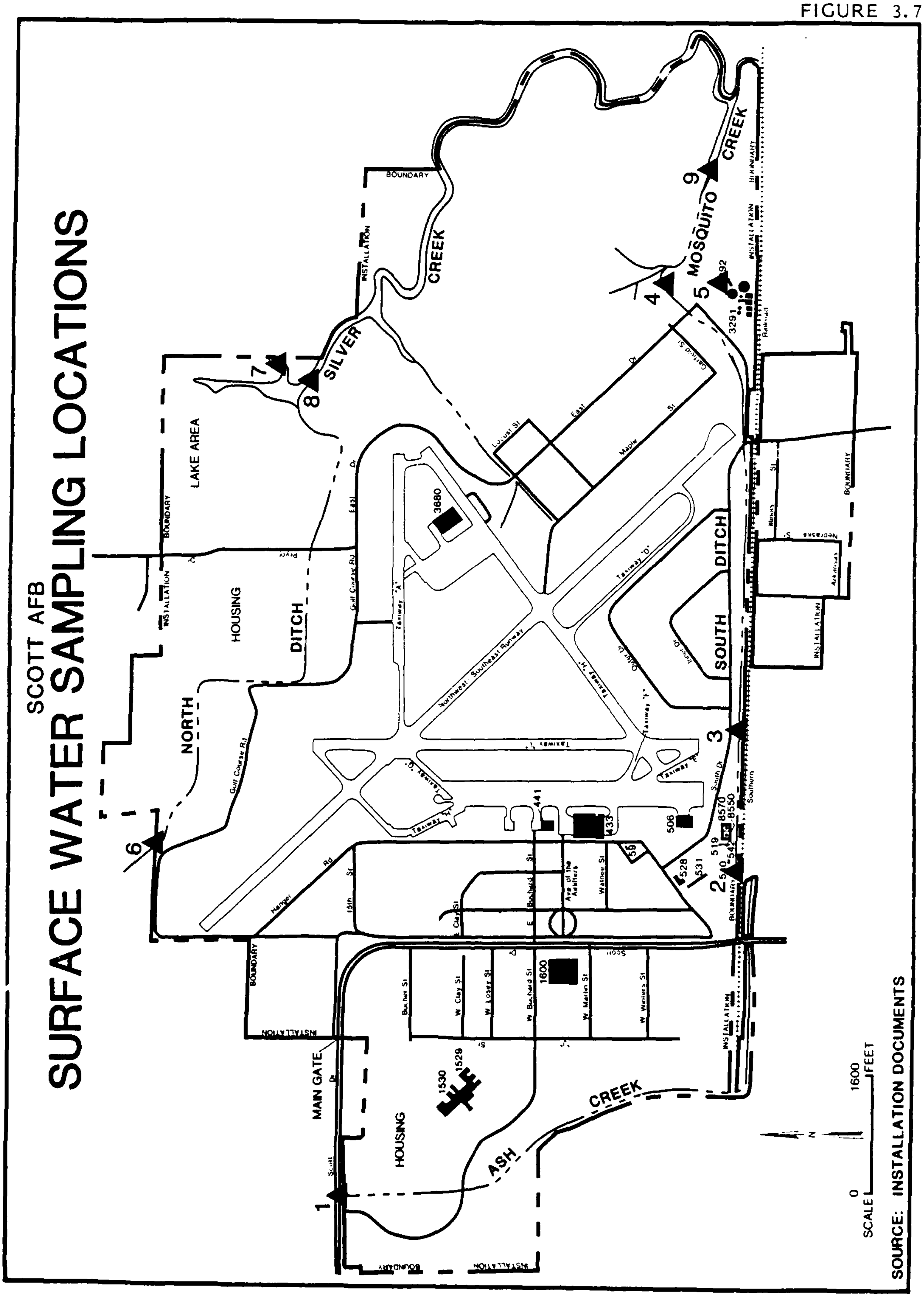
Well No. on Map	Depth, ft.	Aquifer	General Location	Capacity gpm	Construction Date
1	120	Shale	1 mile north of base	<5	1955
2	166	Shale	1 mile north of base	<5	1950's
3	70	Clay	1 mile northwest	<5	1956
4	78	Shale	0.2 miles west	<5	1950's
5	75	Shale	0.5 miles southwest	<5	1950's
6	545	Sandstone	1 mile north of base	15	1966
7	24	Sand	1 mile north of base	-	1970
8	48	Rock?*	1 mile north of base	-	-
9	34	Sand and Gravel	West of base	-	1978
10	40	Sandy Clay	1 mile north of base	-	1977
11	35	Sand	1 mile north of base	-	1973
12	46	Sandy Clay	1.5 miles northwest	-	1972
13	47	Clay	1.5 miles northwest	-	1978
14	49	Sandy Clay	1.5 miles northwest	-	1971
15	100	Sand	0.5 miles northeast	-	1979
16	28	Sand and Gravel		-	1980
17	49	Sand	Just south of base	-	1979
18	34	Sandy Clay	Just south of base	-	1969

Source: Illinois State Water Survey File Data.

Note: Estimated well locations are shown on Figure 3.6.
* : Unconfirmed data from drillers log.


SCOTT AFB
STUDY AREA WELL LOCATIONS
LAKE AREA
HOUSING
MAIN GATE
HOUSING
1,2
7
8
6
9
11
10
12
14
13
4
3
15
16
17
18
5
SCALE 0
1600 FEET
SOURCE: ILLINOIS STATE WATER SURVEY FILES

SCOTT AFB
SURFACE WATER SAMPLING LOCATIONS



SOURCE: INSTALLATION DOCUMENTS

were noted. Specifically, copper levels were elevated during 1984 at sampling locations 8 and 9. The levels for pH also appeared to be elevated at all sampling locations. This event may be due to natural conditions prevalent in the study area and could not be attributed to specific waste disposal practices on base.

THREATENED AND ENDANGERED SPECIES

No threatened or endangered species of plants or animals are known to exist on base. However, several threatened or endangered animals could be transients in the area. The Silver Creek floodplain forest area may provide suitable habitat for the federally endangered Indiana and gray bats. The area may also provide suitable habitat for the rare or endangered bobcat, river otter, alligator snapping turtle, blue-spotted salamander, little blue heron, black-crowned night heron, marsh hawk, red-shouldered hawk, yellow-bellied sapsucker, brown creeper, Nashville warbler and the pine warbler. These animals are items of concern to the Illinois Nature Preserves Commission. The floodplain forest is also reported to provide habitat to a wide variety of non-endangered upland game, deer and waterfowl. The floodplain also provides resting and feeding areas for a wide variety of migratory waterfowl using the Mississippi Flyway seasonally.

SUMMARY OF ENVIRONMENTAL SETTING

The environmental setting data reviewed for this investigation indicate that the following elements are relevant to the evaluation of past hazardous waste management practices at Scott Air Force Base:

- The mean annual precipitation is 39.1 inches and net precipitation (total precipitation minus evaporation) is calculated to be 3.1 inches.
- Flooding is not normally a problem at the base. Its occurrence is normally confined to the zone adjacent to Ash Creek and the Silver Creek lowland.
- Base surface soils are predominantly fine-grained, low to moderately low permeability silts and clays.

- Shallow aquifers (alluvium in Silver Creek valley and sand strata within glacial deposits) underlie the base at shallow depths, 20 feet or less below grade. The depth to a permanent water table in these units is probably within the range of 1 to 15 feet below land surface.
- Most of the base is possibly located in the recharge zone for these shallow aquifers.
- The shallow aquifers are utilized as a limited source of water supply by domestic and agricultural consumers near the base. The aquifers are of limited extent and are not regionally significant.
- A bedrock aquifer underlies the shallow units. It is also of limited usefulness. A few local consumers utilize this aquifer.
- Water quality in base surface waters normally meets the established criteria for the Illinois General Use classification.
- No threatened or endangered species of plants or animals are known to be in residence at Scott AFB. However, the Silver Creek floodplain forest may provide suitable habitat for such species and for migratory waterfowl.

It may be seen from these key elements that potential pathways facilitating the migration of hazardous-waste related contamination exist. Hazardous waste constituents present at ground surface could be mobilized to the shallow aquifers and subsequently to the deeper (rock) aquifer or to local surface waters. It is not likely that contamination migration would immediately impact off-base populations.

SECTION 4

FINDINGS

This section summarizes hazardous wastes and potentially hazardous wastes generated by installation activities, identifies disposal sites located on base, and evaluates the potential for environmental contamination. Past waste generation and disposal methods were reviewed to assess hazardous waste management at Scott Air Force Base.

SATELLITE FACILITIES REVIEW

A review of files and records and interviews with present and past base employees were carried out to identify past activities at remote base annexes which could have resulted in the disposal of hazardous or potentially hazardous waste. Because of the nature of the activities conducted at the remote communications annexes (MARS, TACAN, and repeater sites), namely routine maintenance of equipment, none of these annexes were found to have significant waste generation or disposal activities, past or present. The St. Louis Air Force Station annex is discussed further in Appendix D.

BASE HAZARDOUS WASTE ACTIVITY REVIEW

A review was made of past and present base activities that resulted in generation, accumulation, and disposal of hazardous and potentially hazardous waste. Information was obtained from files and records, interviews with past and present base employees, and site inspections.

It is noted that file data and interviews did not enable determination of most waste handling activities prior to about 1950. From the historical descriptions of the training activities at the base, it is believed that the generation rate of hazardous materials prior to this date was small. In addition, many of the currently known hazardous chemicals were developed during and after World War II.

Hazardous waste sources at Scott AFB are grouped into the following categories:

- o Industrial Operations (Shops)
- o Waste Accumulation and Storage Areas
- o Fuels Management
- o Spills and Leaks
- o Pesticide Utilization
- o Fire Protection Training

The following discussion addresses only those wastes generated on Scott AFB which are either hazardous or potentially hazardous. A hazardous waste, for this report, is defined by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). For study purposes, waste petroleum products such as contaminated fuels, waste oils and waste solvents are also included as potentially hazardous wastes.

No distinction is made in this report between "hazardous substances/materials" and "hazardous wastes". A potentially hazardous waste is one which is suspected of being hazardous although insufficient data are available to fully characterize the material.

Industrial Operations (Shops)

Summaries of industrial operations at Scott AFB were developed from installation files and interviews. Information obtained was used to determine which operations handle hazardous materials and which ones generate hazardous wastes. Summary information on all installation shops is provided as Appendix E, Master List of Shops.

For the shops identified as generating hazardous wastes, file data were reviewed and personnel were interviewed to determine the types and quantities of materials and present and past disposal methods. Information developed from base files and interviews with installation employees is summarized in Table 4.1.

The industrial operations at Scott AFB can be divided into seven main operating units as follows:

TABLE 4.1
INDUSTRIAL OPERATIONS (Shops)
Waste Management

SHOP NAME	CURRENT LOCATION (BLDG. NO.)	WASTE MATERIAL	CURRENT WASTE QUANTITY GENERATED	METHOD(S) OF TREATMENT, STORAGE & DISPOSAL 1950 1960 1970 1980
375TH AIR BASE GROUP (MAC)-CIVIL ENGINEERING				
MAINTENANCE-PAINT	532	SCRAP THINNER	360 GALS./YR.	FPTA ON-BASE LANDFILL; OFF-BASE LANDFILL; DPDO
		SCRAP PAINT	120 GALS./YR.	ON-BASE LANDFILL; OFF-BASE LANDFILL; DPDO
EQUIPMENT OPERATIONS	528	MOTOR OILS	18 GALS./YR.	DPDO
		HYDRAULIC FLUIDS	6 GALS./YR.	DPDO
ENTOMOLOGY AND GROUNDS MAINTENANCE	513, 1198	PESTICIDES RINSATES	200 GALS./YR.	SANITARY SEWER
		DILUTE PESTICIDE RINSATES	10 GALS./YR.	STORM SEWER
EXTERIOR ELECTRIC	514	PCB TRANSFORMER OIL	OCCASIONAL	DPDO; ONE TIME ON-BASE LANDFILL DISPOSAL; DPDO
LIQUID FUELS MAINTENANCE	516	POL TANK SLUDGE	100 GALS./YR.	OFF-BASE CONTRACTOR; SLUDGE WEATHERING AREA; DPDO
375TH AEROMEDICAL AIRLIFT WING CONSOLIDATED AIRCRAFT MAINTENANCE SQUADRON				
AEROSPACE GROUND EQUIPMENT	456	STODDARD SOLVENT (PD-680)	1,200 GALS./YR.	STORM SEWER; DPDO
		WASTE OIL	100 GALS./YR.	DPDO

KEY
———— CONFIRMED TIME-FRAME DATA BY SHOP PERSONNEL
- - - - - - ESTIMATED TIME FRAME DATA BY SHOP PERSONNEL

TABLE 4.1(CONT'D)

INDUSTRIAL OPERATIONS (Shops)

Waste Management

SHOP NAME	CURRENT LOCATION (BLDG. NO.)	WASTE MATERIAL	CURRENT WASTE QUANTITY GENERATED	METHOD(S) OF TREATMENT, STORAGE & DISPOSAL 1950 1960 1970 1980
BATTERY SHOP	441	SULFURIC ACID	720 GALS./YR.	SANITARY SEWER
		CALCIUM CARBONATE	150 LBS./YR.	SANITARY SEWER
		SODIUM CARBONATE	1,800 LBS./YR.	SANITARY SEWER
		BATTERY CASES	100 CASES/YR.	DPDO
CLEANING AND ELECTROPLATING	441	CADMIUM ELECTROPLATING SLUDGE	300 GALS./ ONE TIME DISPOSAL	DPDO
CORROSION CONTROL	441	STRIPPERS-METHYLENE CHLORIDE	150 GALS./EVERY 3 YRS.	STORM SEWER DPDO
		SCRAP THINNERS AND PAINTS	330 GALS./YR.	FPTA/ON-BASE LANDFILL DPDO
		STODDARD SOLVENT (PD-680)	400 GALS./YR.	STORM SEWER DPDO
		PAINT BOOTH SLUDGE	60 LBS./YR.	OFF-BASE LANDFILL DPDO
FABRICATION AND SURVIVAL SYSTEMS	441	CONTAMINATED THINNER AND DOPE	36 GALS./YR.	DPDO
JET ENGINE SHOP	433	STODDARD SOLVENT (PD-680)	12 GALS./YR.	DPDO
		. 'STE OILS	24 GALS./YR.	DPDO

KEY

———— CONFIRMED TIME-FRAME DATA BY SHOP PERSONNEL

- - - - - - ESTIMATED TIME FRAME DATA BY SHOP PERSONNEL

TABLE 4.1(CONT'D)

INDUSTRIAL OPERATIONS (Shops)

Waste Management

SHOP NAME	CURRENT LOCATION (BLDG. NO.)	WASTE MATERIAL	CURRENT WASTE QUANTITY GENERATED	METHOD(S) OF TREATMENT, STORAGE & DISPOSAL (1950 – 1960 – 1970 – 1980)
RECIPROCATING ENGINE SHOP	HANGER 2	WASTE OILS AND CLEANERS	200 GALS./YR.	DPDO
JET ENGINE TEST CELL AND SHOP	455,6900	STODDARD SOLVENT (PD-680)	300 GALS./YR.	DRAINAGE DITCH; OIL-WATER SEPARATOR
		WASTE FUELS (JP-4)	600 GALS./YR.	FPTA/DPDO
FLIGHTLINE MAINTENANCE (C-140 AND C-9)	—	WASTE OILS	216 GALS./YR	DPDO
		WASTE HYDRAULIC FLUIDS	2,400 GALS./YR.	DPDO
PMEL/NDI LAB	3665	TRICHLOROETHANE	12 GALS./YR.	SANITARY SEWER/EVAPORATION
		COBOLT-60	<1 LB./YR.	DPDO
PNEUDRAULICS SHOP	433	INSTRUMENTAL MERCURY	2 LBS./YR.	WARNER ROBBINS; DPDO
		HYDRAULIC FLUID	55 GALS./YR.	DPDO
REPAIR AND RECLAMATION	433	STODDARD SOLVENT (PD-680)	12 GALS./YR.	DPDO
WHEEL AND TIRE SHOP	506	STODDARD SOLVENT (PD-680)	660 GALS./YR.	DPDO
		TRICHLOROETHANE	50 GALS./YR.	DPDO

KEY

——— CONFIRMED TIME-FRAME DATA BY SHOP PERSONNEL

- - - - - ESTIMATED TIME FRAME DATA BY SHOP PERSONNEL

TABLE 4.1(CONT'D)

INDUSTRIAL OPERATIONS (Shops)

Waste Management

SHOP NAME	CURRENT LOCATION (BLDG. NO.)	WASTE MATERIAL	CURRENT WASTE QUANTITY GENERATED	METHOD(S) OF TREATMENT, STORAGE & DISPOSAL 1950 1960 1970 1980
375TH AEROMEDICAL AIRLIFT WING TRANSPORTATION SQUADRON				
ALLIED TRADES-BASE VEHICLE MAINTENANCE	53,54	WASTE OIL	1,300 GALS./YR.	FPTA/DPDO
		ANTIFREEZE	500 GALS./YR.	SANITARY SEWER; DPDO
		STODDARD SOLVENT (PD-680)	220 GALS./YR.	SANITARY SEWER; DPDO
		PAINT BOOTH SLUDGE	60 LBS./YR.	OFF-BASE LANDFILL; DPDO
		HYDRAULIC/BRAKE FLUID	5 GALS./YR.	DPDO
REFUELING MAINTENANCE	3185	STODDARD SOLVENT (PD-680)	55 GALS./YR.	DPDO
		WASTE OIL	50 GALS./YR.	FPTA/DPDO
		ANTIFREEZE	55 GALS./YR.	DPDO
USAF MEDICAL CENTER				
DENTAL CLINIC/LABORATORY	1536	MERCURY AMALGAM	<2 LBS./YR.	MEDICAL LOGISTICS
		PHOTO DEVELOPER	<12 GALS./YR.	SANITARY SEWER
		PHOTO FIXER	<6 GALS./YR.	TO X-RAY LAB FOR SILVER RECOVERY
MEDICAL PHOTOGRAPHER	1530	PHOTODEVELOPER	24 GALS./YR.	SANITARY SEWER
		PHOTOFIXER	12 GALS./YR.	TO X-RAY LAB FOR SILVER RECOVERY

KEY

——— CONFIRMED TIME-FRAME DATA BY SHOP PERSONNEL

- - - - - - ESTIMATED TIME FRAME DATA BY SHOP PERSONNEL

TABLE 4.1(CONT'D)

INDUSTRIAL OPERATIONS (Shops)

Waste Management

SHOP NAME	CURRENT LOCATION (BLDG. NO.)	WASTE MATERIAL	CURRENT WASTE QUANTITY GENERATED	METHOD(S) OF TREATMENT, STORAGE & DISPOSAL (1950 1960 1970 1980)
X-RAY/RADIOLOGY	1530	PHOTODEVELOPER	1,500 GALS./YR.	SANITARY SEWER
		PHOTOFIXER	3,000 GALS./YR.	SILVER RECOVERY/DPDO
CLINICAL LABORATORIES	1530	XYLENE	20 GALS./YR.	SANITARY SEWER → DPDO
375TH AIR BASE GROUP-MORALE, WELFARE, RECREATION DIVISION				
AERO CLUB	3650	WASTE OIL	14 GALS./YR.	FPTA/DPDO
PHOTO HOBBY	1989	PHOTODEVELOPER	75 GALS./YR.	SANITARY SEWER
		PHOTOFIXER	50 GALS./YR.	SILVER RECOVERY → SANITARY SEWER
AUTO HOBBY SHOP	1989	WASTE OIL	3,200 GALS./YR.	OFF-BASE CONTRACTOR
375TH AIR BASE GROUP/ADMINISTRATION				
DET. 1, 1361 AUDIOVISUAL SERVICES SQUADRON	700	PHOTODEVELOPERS	300 GALS./YR.	SANITARY SEWER
		PHOTOFIXERS	300 GALS./YR.	SILVER RECOVERY

KEY

——— CONFIRMED TIME-FRAME DATA BY SHOP PERSONNEL

- - - - - ESTIMATED TIME-FRAME DATA BY SHOP PERSONNEL

TABLE 4.1(CONT'D)

INDUSTRIAL OPERATIONS (Shops)

Waste Management

SHOP NAME	CURRENT LOCATION (BLDG. NO.)	WASTE MATERIAL	CURRENT WASTE QUANTITY GENERATED	METHOD(S) OF TREATMENT, STORAGE & DISPOSAL 1950 1960 1970 1980
102ND ARMY-AIR RESERVES				
MAINTENANCE AND ENGINE SHOP	3680	HYDRAULIC FLUIDS	<55 GALS./YR.	OPDO
		LUBE OIL	<100 GALS./YR.	OPDO
		SYNTHETIC OILS	<100 GALS./YR.	OPDO
		STODDARD SOLVENT (PD-680)	200 GALS./YR.	OPDO
		STODDARD SOLVENT (PD-680)	1,000 GALS./YR.	OIL-WATER SEPARATOR

KEY

——— CONFIRMED TIME-FRAME DATA BY SHOP PERSONNEL

------ ESTIMATED TIME FRAME DATA BY SHOP PERSONNEL

1. 375th Air Base Group (MAC) - Civil Engineering
2. 375th Aeromedical Airlift Wing - Consolidated Aircraft Maintenance Squadron
3. 375th Aeromedical Airlift Wing - Transportation Squadron
4. USAF Scott Medical Center
5. 375th Air Base Group (MAC) - Morale, Welfare and Recreation Division
6. 375th Air Base Group/Administration - Det. 1, 1361 Audiovisual Squadron
7. 102nd U.S. Army Air Reserve Station

Many waste solvents, fuels and other petroleum-based fluids from industrial operations were burned at the fire protection training area while others were managed through the Defense Property Disposal Office (DPDO). Other liquid wastes in the past have been discharged to oil-water separaters or to the sanitary and storm sewers. Substantial volumes of solid and liquid wastes were disposed of at an on-site landfill. Since about 1976, an off-site commercial landfill has been utilized to dispose of most solid waste generated on base. The on-site landfill has received primarily construction rubble and minor amounts of general refuse since 1976.

Waste Accumulation and Storage Areas

Waste materials are accumulated at many locations on Scott AFB that fall under one of the following classifications:

1. Temporary storage at waste generation sites.
2. Less than 90-day storage at Hazardous Waste Accumulation Points (HWAP).
3. Hazardous waste storage areas.
4. Waste oil/fuel storage in tanks.
5. Oil-water separators.

There are 17 locations (Figure 4.1) that generate recoverable waste fuels and hazardous materials. Fifteen areas on base are used as hazardous waste and waste petroleum product accumulation points, also indicated in Figure 4.1. The sites at facilities No. 540 and 59 are

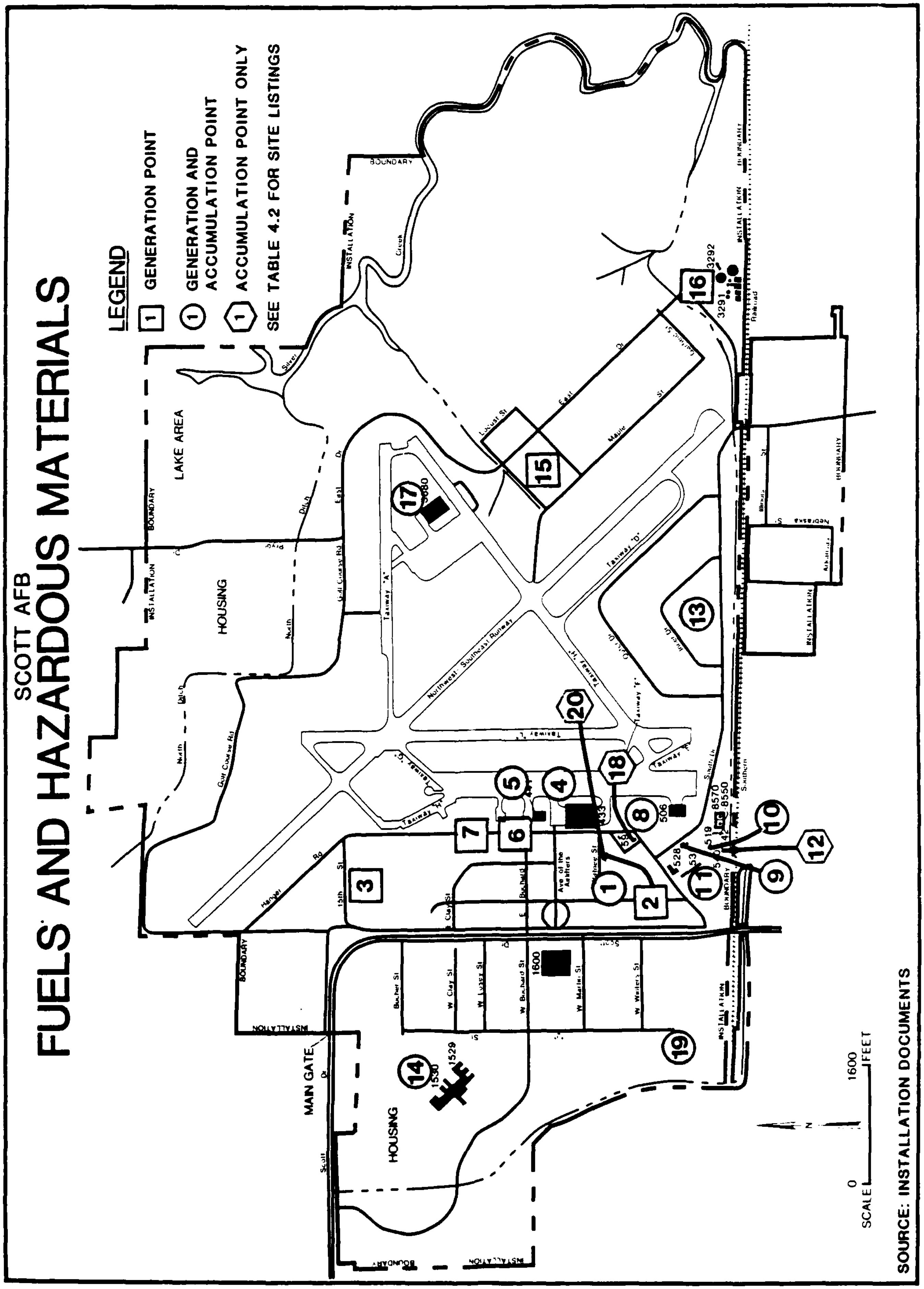

SCOTT AFB
FUELS AND HAZARDOUS MATERIALS
LEGEND
1 GENERATION POINT
1 GENERATION AND ACCUMULATION POINT
1 ACCUMULATION POINT ONLY
SEE TABLE 4.2 FOR SITE LISTINGS
LAKE AREA
HOUSING
HOUSING
MAIN GATE
INSTALLATION BOUNDARY
Taxiway 'A'
Taxiway 'D'
Northwest Southeast Runway
Hanger Rd
15th St
Golf Course Rd
North Ditch
Silver Creek
East Dr
Locust St
Maule St
Ave of the Airlifters
W Clay St
W Lyster St
W Buchard St
W Martin St
W Winters St
Bucher St
Scott Dr
1600
1529
1530
528
519
506
433
8570
8550
3291
3292
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
SCALE
0
1600
FEET
SOURCE: INSTALLATION DOCUMENTS

TABLE 4.2
LISTING AND LOCATION CODES FOR HAZARDOUS WASTE
GENERATORS AND ACCUMULATION POINTS

Location* Code		Site/Shop	Generator	Accumulation Point
1.	Bldg. 53	375 TRNSS Allied Trades Shop	Yes	Yes
2.	Bldg. 54	375 TRNSS Vehicle Maintenance Shop	Yes	No
3.	Bldg. 382	375 SUPS Fuels Lab	Yes	No
4.	Bldg. 433	Hangar No. 1	Yes	Yes
5.	Bldg. 441	375 CAMS	Yes	Yes
6.	Bldg. 443	375 CAMS	Yes	No
7.	Bldg. 456	375 CAMS-AGE	Yes	No
8.	Bldg. 506	Hangar No. 3	Yes	Yes
9.	Bldg. 514	375 CES - Ext. Elect., Entomology	Yes	Yes
10.	Bldg. 515	375 CES - Grounds	Yes	Yes
11.	Bldg. 532	375 CES - Paint	Yes	Yes
12.	Bldg. 540	PCB Transformer Storage	No	Yes
13.	Bldg. 700	375 ABG Printing	Yes	Yes
14.	Bldg. 1530	USAF Medical Center	Yes	Yes
15.	Bldg. 3184	375 TRNSS Refueling Maintenance	Yes	No
16.	Bldg. 3290	375 CES Sewage Treatment Plant	Yes	No
17.	Bldg. 3680	102 Army Air Reserve	Yes	Yes
18.	Aqua-Yard	Waste Storage Tanks	No	Yes

TABLE 4.2
LISTING AND LOCATION CODES FOR HAZARDOUS WASTE
GENERATORS AND ACCUMULATION POINTS
(Continued)

Location* Code		Site/Shop	Generator	Accumulation Point
19.	Bldg. 59	Waste Storage Area	No	Yes
20.	Bldg. 1989	Auto Hobby Shop	Yes	Yes
21.	Bldg. 45	Waste Fuel Oil	No	Yes

Source: Installation Documents
* Location Code for Figure 4.2

permitted hazardous waste storage facilities where PCB transformers, solvents and waste oils are stored before contractor pickup. These sites are described in Table 4.2.

Six underground waste storage tanks were identified at Scott AFB. Available information concerning the size, location, age and service of those tanks is presented in Table 4.3. These tanks serve as central accumulation points for various petroleum fuels and synthetic fluids prior to contractor pick-up. The four largest tanks (10,000 gal each) are located at the Aqua Yard. Two smaller tanks are located at the auto hobby shop and Building 45 (550 gal and 1,000 gal, respectively).

There are eight oil-water separators located on base, all of which exist below grade. Half of these pretreatment devices discharge their water phases to the storm sewer and the remainder discharge to the sanitary sewer. The oil phases of all separators are collected and then disposed of by contract with DPDO. Oil separators are discussed in greater detail in a later section of this chapter.

Fuels Management

The Scott AFB Fuels Management storage system consists of over 95 storage tanks located throughout the base. A description of all known diesel fuel, aviation gas, automobile gas, jet fuel, fuel oil, lubricating oil and spent petroleum waste tanks is presented in Appendix D. As indicated in Table D.3, three tanks are inactive and are reported empty.

All bulk fuels are transported onto the base in tank trucks; no fuels are transferred by pipelines crossing base boundaries. Three internal fuel pipelines do exist however. One line is inactive while another line transports fuel from the large bulk (JP-4) storage facilities (No. 8550 and 8570) to the Jet fuel fill stands located to the east of Bldg. No. 506 on the south taxiway. The third fuel pipeline transports fuel from the bulk JP-4 storage facility (No. 8552 and 8554) to the adjacent truck fill stands.

Fuel storage tanks are inspected using level tests on a monthly basis. The level tests ("dip-stick" tests) are used to check for unexplained changes in the volume of liquid in the tanks. An interval of 3 to 5 years is typical for cleaning of most tanks. A small amount of sludge is generated in these tanks and in the past routinely was removed

TABLE 4.3
BELOW GROUND WASTE LIQUIDS
STORAGE FACILITIES

Tank No.	Location	Contents	Capacity (gal)	Approximate Age (years)
#13	Aquayard	Diesel, JP-4	10,000	40-43
#14	Aquayard	Mixed Light Fuels	10,000	40-43
#15	Aquayard	Motor Oil	10,000	40-43
#16	Aquayard	Hydraulic fluids and other waste synthetic fluids and oils	10,000	40-43
#49	Bldg. 45	Waste Fuel Oil	1,000	6
-	Bldg. 1989 (Auto Hobby)	Waste Motor Oil	550	12

Source: Installation Documents

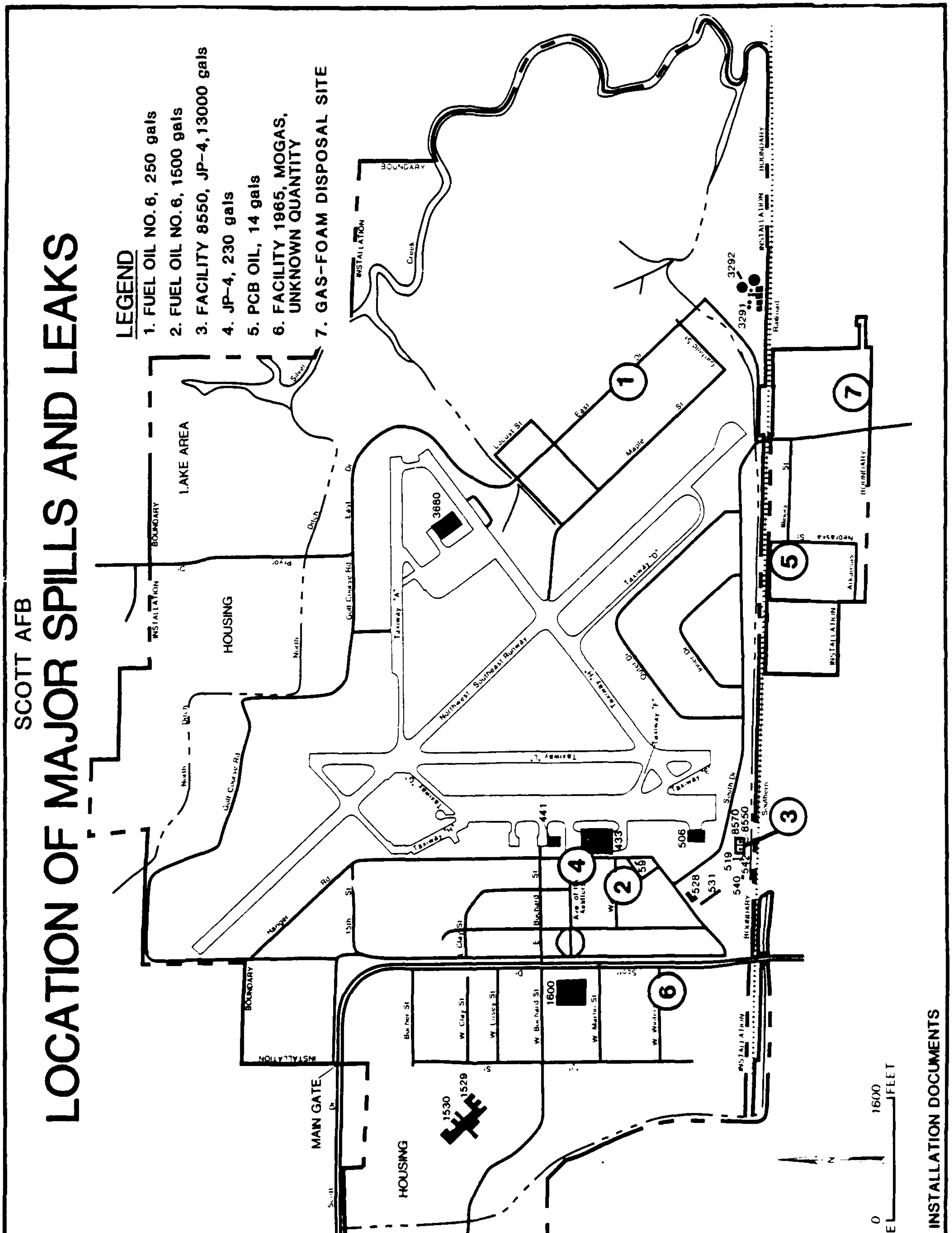
by wastage to ground, storm or sanitary sewers or contract disposal. Sludge generated by large bulk fuel storage facilities (No. 8550 and 8570) and possibly by others was placed in a bermed area adjacent to tanks 8552 and 8554 for drying from about 1975 to 1980. Existing policy now calls for drumming of all this waste for off-site disposal. Two tanks have been involved in major fuel spills and leaks; these are Facility 8550 and Facility 1965. These episodes are discussed in the subsequent section under Spills and Leaks.

Spills and Leaks

Base records and interviews with present and past personnel indicate several significant fuel leaks have occurred since 1950. Base records kept since 1974 also indicate that many minor spills and leaks have occurred. These minor spills were either allowed to evaporate, were picked up by Liquid Fuels Maintenance or the fire department, or were washed down sanitary or storm sewers with eventual discharge to Silver Creek.

The locations of seven significant leaks and spills are indicated on Figure 4.2. Two spills were noted in the SPCC plan of 1982 involving Fuel Oil No. 6 in February, 1978. The first spill resulted in about 250 gallons of Fuel Oil No. 6 entering a drainage ditch adjacent to the fueling point at Bldg. 3191. The drainage ditch discharges to Silver Creek and some oil was reported to have reached the creek. The second February, 1978 spill resulted in about 1,500 gallons of Fuel Oil No. 6 spilling into Silver Creek due to a rupture in a steam heating coil serving the 420,000 gallon tank at Bldg. No. 45.

Two other spills were reported involving JP-4. In 1977 approximately 13,000 gallons of JP-4 fuel were estimated lost in an incident involving Tank 8550. Base records are not clear on this matter. The incident alledgedly involved a 20,000 gallon spill, but only 6,000 or 7,000 gallons of fuel were recovered out of the diked area surrounding the tank, and an undetermined amount of fuel was discharged to Silver Creek. Seven recovery wells were dug to attempt to retrieve fuels that may have infiltrated into subsurface areas. The wells were dug about 18 inches in diameter and about 9 feet deep. The wells did not, however, yield any fuel. A recent incident (October, 1983) also involving JP-4 resulted in spillage of about 230 gallons into a drainage ditch near the



SCOTT AFB
LOCATION OF MAJOR SPILLS AND LEAKS

intersection of Avenue of the Airlifters and Hanger Road. The drainage ditch discharged to the South Ditch/Silver Creek waterways. The incident originated when a fuel truck was involved in an accident with another vehicle.

A spill of 14 gallons of PCB-containing transformer fluid (25-27 ppm) occurred in 1984 onto the gravelled area of the DPDO storage yard. Records indicate that all PCB residue was removed during cleanup operations at that time.

Another incident involving fuels occurred when an underground tank adjacent to the Facility 1965 BX service station was discovered to be leaking in the mid-1970's. The leak was attributed to a faulty valve on the tank. Since the leak was discovered indirectly from odors in the adjacent sanitary sewer lines, it is not known how long the tank may have leaked. A major effort was undertaken to recover lost fuel and the tank was dug up, repaired and put back in place. Although several barrels of fuel were recovered from the pit dug to retrieve the tank, the extent of any remaining contamination (if any) was not documented.

One spill of potentially hazardous material during the 1950's was noted. On one occasion during the 1950's a spill of aviation gasoline from an aircraft was mixed with fire extinguishing foam and removed from the concrete area where the spill occurred. This gasoline-foam mixture, estimated to include about 100 gallons of gasoline, was placed in a pit approximately 20 feet square and one to two feet deep south of the south end of the main runway. This site remains visible at present as a wet-weather pond in a black locust grove.

Pesticide Utilization

Pesticides have been used at Scott AFB for controlling weeds, insects, rodents and fungus. Pesticides used at the base are listed in Appendix D. Entomology mixes most of the chemicals used on base inside and/or adjacent to Building 1050. The golf course and grounds crew also mixes pesticides at a building located adjacent to the golf course (Bldg. 1197). In practice, the container rinsewater has been put back into sprayers for dilution water. Empty containers are punctured and disposed at the landfills used by the base before 1976 and since that time they have been disposed off base. Residual pesticide in the spray equipment is used at various areas where the material is being applied.

Sprayers are either rinsed at random locations on the base with the rinsewater run out along fence lines or they are rinsed at Building 514 or 1197 with the initial rinsewater drained to a sanitary sewer and final rinse to storm sewers.

Fire Protection Training

Fire protection training at Scott AFB has been conducted at three sites. These site locations are depicted in Figure 4.3. Each site is described in the following discussion.

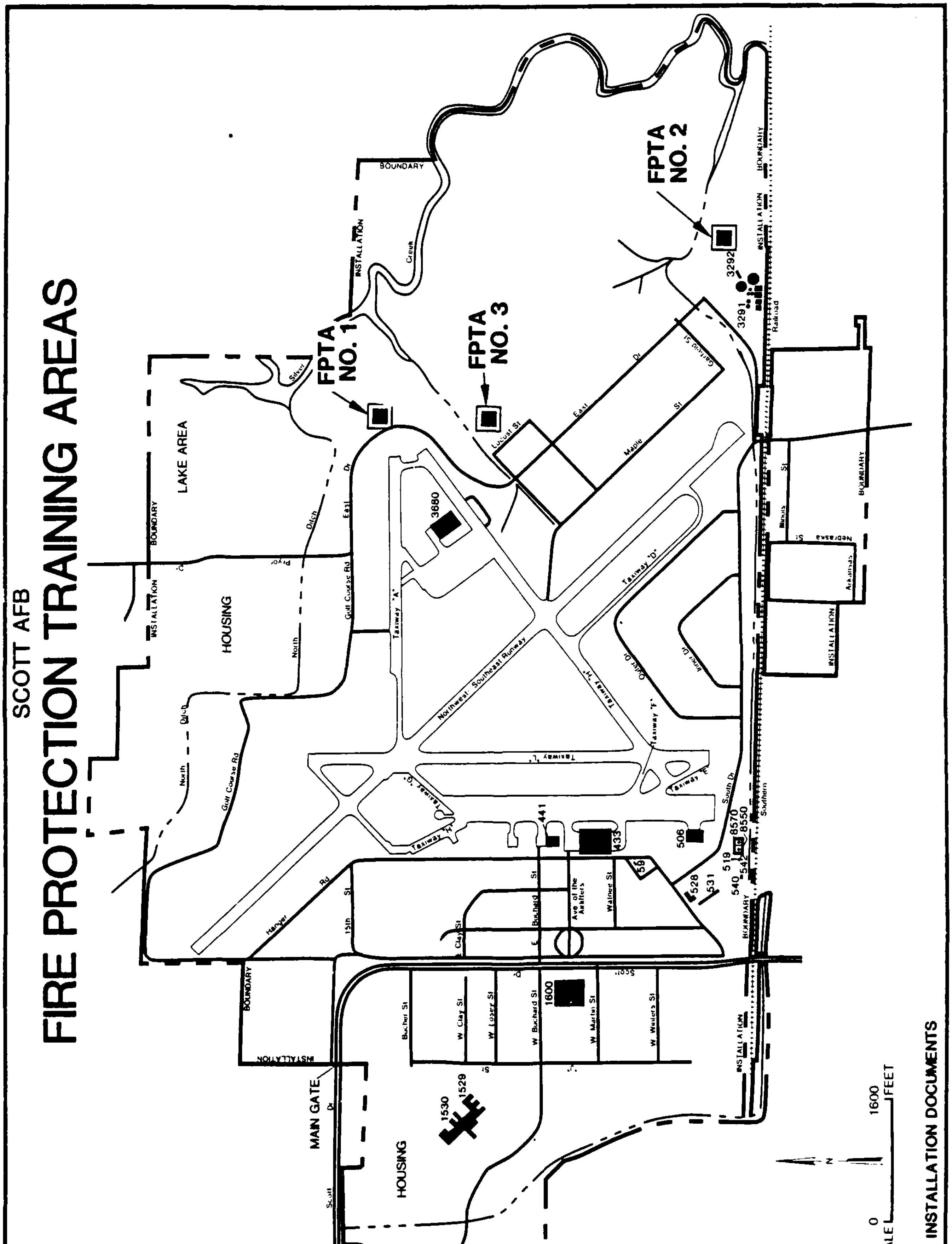
Fire Protection Training Area (FPTA) No. 1

Fire Protection Training Area No. 1 was located east of East Drive across from present-day Taxiway "A". This site was activated in approximately 1942 and was used until the early 1950's. At this site fuel was stored in 55-gallon drums adjacent to the site; drums were emptied onto a soil and gravel-covered area and the fuel was ignited for training exercises. Extinguishing agents used were CB and protein foam. Fuels included contaminated gasoline, oils, and paint thinners, as well as scrap fabric-covered aircraft. Unburned fuel collection and oil-water separation were not practiced at this site. Exact frequency of burns is unknown but reports indicated that use was at least monthly with several hundred gallons of fuel used each training exercise. During the early 1950's fire protection training was moved to site number 2, described later. At present the site of FPTA No. 1 is level, covered with grass, and is the site of the Small Arms Range. Because of the nature and duration of the activities at the site, a potential for underground contaminant migration exists for the site.

Fire Protection Training Area (FPTA) No. 2

Fire Protection Training Area No. 2 was located at the southeast corner of the base at the western edge of the base landfill. This site was used for fire training exercises from the early 1950's until approximately 1969, when fire training moved to the present site, FPTA No. 3. At this site fuel was stored in 55-gallon drums adjacent to the site; there were often 100 to 200 such drums at the site. Drums were emptied by tipping over onto a soil and gravel-covered area and the spilled fuel was ignited for fire training exercises. Extinguishing agents included CB, protein foam, and carbon dioxide. Fuels included waste alcohol, gasoline, paint thinners, and JP-4. Burn frequencies averaged one or

FIGURE 4.3


SCOTT AFB
FIRE PROTECTION TRAINING AREAS
FPTA NO. 1
FPTA NO. 2
FPTA NO. 3
LAKE AREA
HOUSING
HOUSING
MAIN GATE
INSTALLATION BOUNDARY
Northwest Southeast Runway
Taxiway "A"
Taxiway "D"
3680
3291
3292
441
433
506
1800
1529
1530
SCALE 0 1600 FEET
SOURCE: INSTALLATION DOCUMENTS

two times per month, with approximately 300 to 500 gallons of fuel used per exercise. Unburned fuel collection and oil-water separation were not practiced at this site. An aircraft hull, that of a B-25, was used in exercises; when fire training exercises moved to the present location this aircraft hull was pushed into the landfill as part of the site closure and grading. At present this site is at the western edge of the landfill area and has uneven terrain with sparse vegetation. Because of the nature and duration of activities at the site, a potential for underground contaminant migration exists for the site.

Fire Protection Training Area (FPTA) No. 3

Fire Protection Training Area No. 3 is located northeast of Locust Street, and is the present site of fire training exercises. This site was activated in approximately 1969, and originally consisted of an aircraft mockup on a soil and gravel-covered area with no unburned fuel recovery and collection. In approximately 1979 a fuel recovery system was installed. This system includes an oil-water separator and an underground fuel storage tank. The water phase from the oil-water separator discharges to the sanitary sewer. At this site burn frequency is two to three times per quarter; a typical burn involves the release of approximately 900 gallons of fuel into the burn area, ignition and flame development for 40 seconds, and extinguishing with various agents including AFFF, Halon 1211, CB, ABC dry chemical, and foam.

Visual examination of the area during the site visit indicated surficial contamination and a slight fuel odor in the burn area. Because of the nature of the activities performed at the site, a potential for contaminant migration exists for the site.

BASE WASTE DISPOSAL METHODS

The facilities on Scott AFB which have been used for the management and disposal of waste can be categorized as follows:

- Landfill
- Surface Impoundments
- Explosive Ordnance Disposal Area
- Low-Level Radioactive Waste Burial Site
- Incinerator

- o Wastewater Treatment System
- o Sludge Weathering Lagoon
- o Storm Water Drainage System
- o Oil-Water Separators

These facilities are discussed individually in the following subsections.

Landfill

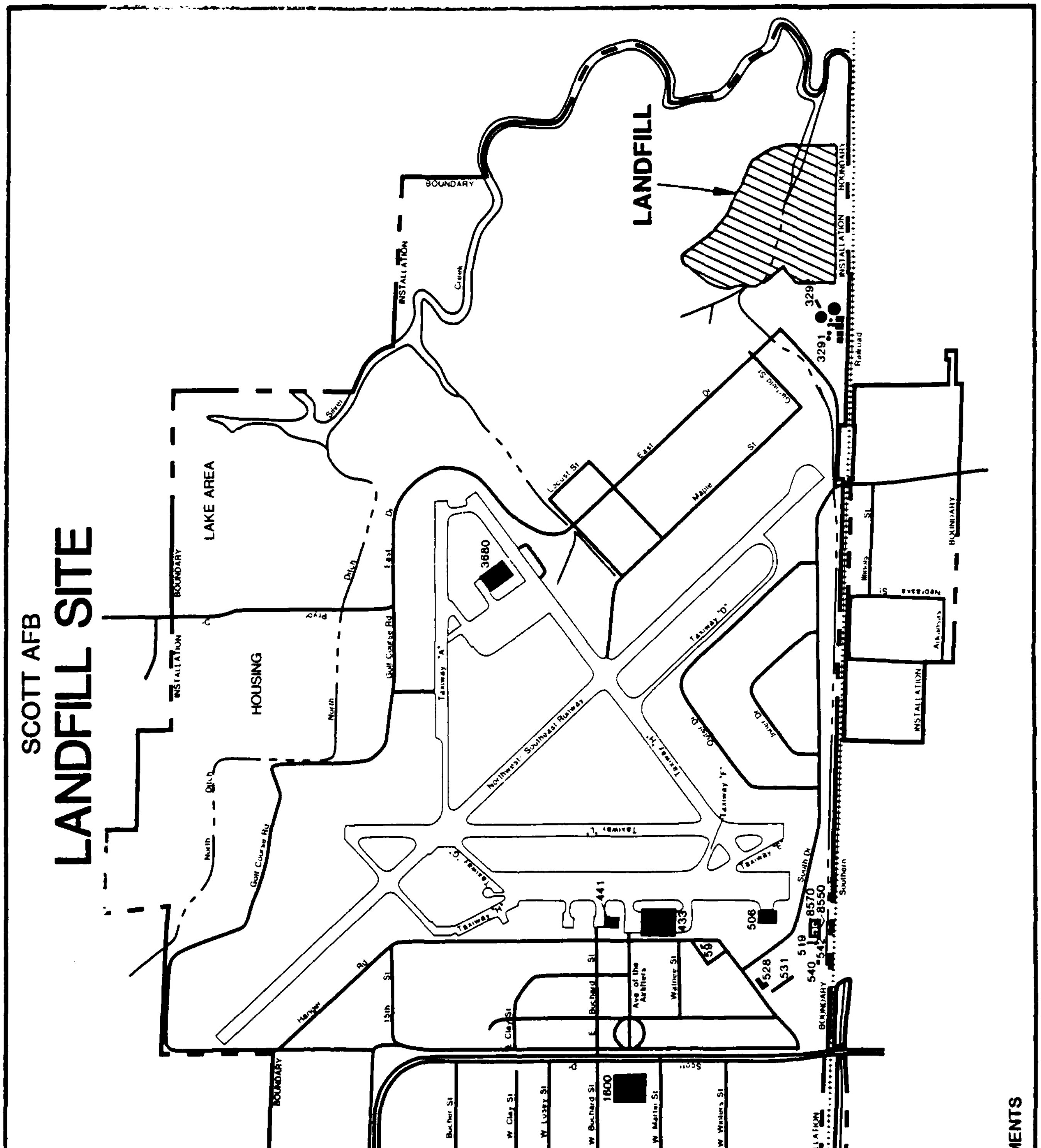
One on-base landfill at Scott AFB has been used for disposal of non-hazardous solid wastes and some industrial waste materials. The location of this landfill and its estimated boundaries are shown in Figure 4.4. The boundaries show that the landfill occupied approximately 60 acres.

The landfill was begun in the early 1940's, and was used for domestic refuse, hardfill and construction rubble, wastewater treatment plant sludge, and industrial wastes. The landfill was trench-and-fill operation, with trenches 8 to 10 feet deep. Over the period of use up to three or four layers of trench-and-fill operations were performed, giving an approximate 30- to 40-foot depth of fill material according to interviewee estimates.

Industrial wastes reported by interviewees to be disposed in the landfill include a quantity of paint (exceeding 1,000 gallons) in cans, pesticides, oils, transformers, and two or three drums (of unknown contents) disposed in the late 1960's. On occasion during the 1950's burning of landfill materials was practiced. An explosive ordnance disposal (EOD) area and FPTA No. 2 are located within the landfill boundaries.

The landfill was closed in 1976; since that time base refuse has routinely been transported off-base and disposed in a commercial landfill facility. Since 1983, hardfill material and wastewater treatment plant sludge again have been disposed at the surface of the on-base landfill.

At present the landfill surface is moderately level and a soil cover is present. Sparse vegetation covers much of the surface. Recently disposed hardfill wastes and wastewater treatment sludge are visible.


SCOTT AFB
LANDFILL SITE
LANDFILL
LAKE AREA
HOUSING
HOUSING
MAIN GATE
INSTALLATION BOUNDARY
Northwest Southeast Runway
Taxiway "A"
Taxiway "D"
Taxiway "F"
Taxiway "L"
Hanger Rd
Golf Course Rd
East Dr
South Dr
Maple St
Locust St
North Ditch
Silver Creek
Southern Railroad
3680
3291
329
441
433
506
519
528
531
540
545
8570
8550
1600
1529
1530
0
1600
FEET
SCALE
N
SOURCE: INSTALLATION DOCUMENTS

Surface Impoundments

Surface impoundments at Scott AFB consist of Scott Lake at the northeastern portion of the base and a golf course pond at the northwestern portion of the base. Both water bodies are supplied by surface drainage from the area; Scott Lake is also supplied by a stream. No past environmental contamination was reported to be associated with these water bodies, and a visual inspection during the site visit showed no evidence of present or past contamination.

Explosive Ordnance Disposal Area

The Explosive Ordnance Disposal (EOD) area on Scott AFB is located at the southeast corner of the base within the boundaries of the landfill as shown in Figure 4.5. The EOD area consists of a depressed area of less than 20-foot span surrounded by an earthen dike of approximately 6-foot height. No record of any use of this site as an EOD area was found; interviews with present and retired base personnel confirmed that the site has not been used for ordnance disposal. No environmental contamination can be documented for this site.

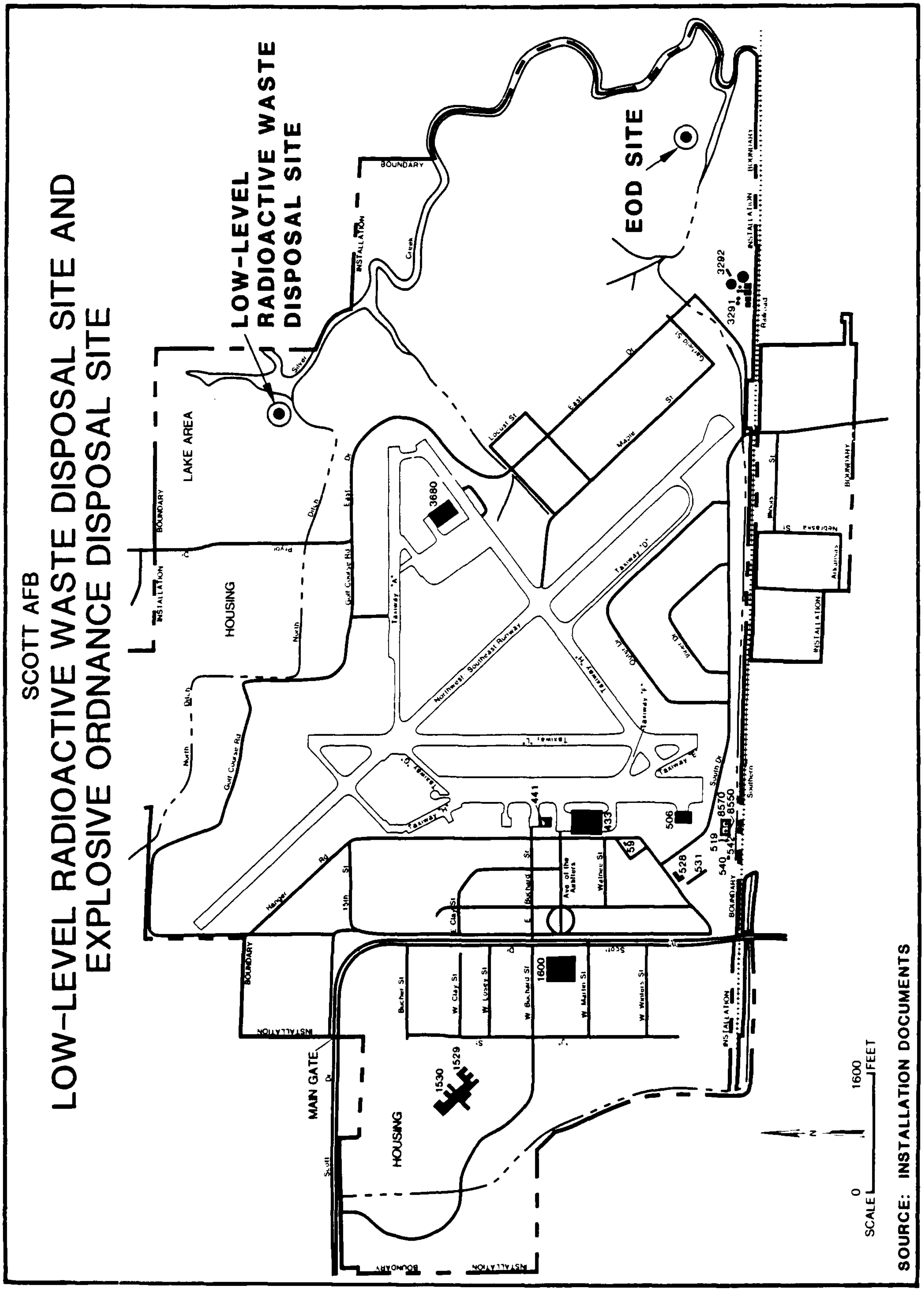
Low-Level Radioactive Waste Disposal Site

A low-level radioactive waste disposal site exists on Scott AFB as shown in Figure 4.5. This site is in the northeastern portion of the base, northeast of East Drive. The site consists of a concrete pad over a concrete-lined vault; the site is fenced and posted with warning signs. Base records and interviews with present and past personnel failed to prove conclusively that the site has or has not been used for low-level radioactive waste disposal. Several interviewees reported that electron tubes may have been disposed at the site during the 1950's, but no firsthand accounts were received. A radiation detection device has been used to survey the site; only background levels of radiation were recorded.

Incinerator

A pathological waste incinerator has been operated at the base hospital since the present facility was opened in the late 1950's. Since 1982, a Kelly Model 3031 incinerator which uses propane has been in use; prior to 1982 an unlabelled unit reportedly of local origin was used. Ash from these incinerators has been disposed with normal base refuse.

FIGURE 4.5



SCOTT AFB
LOW-LEVEL RADIOACTIVE WASTE DISPOSAL SITE AND EXPLOSIVE ORDNANCE DISPOSAL SITE

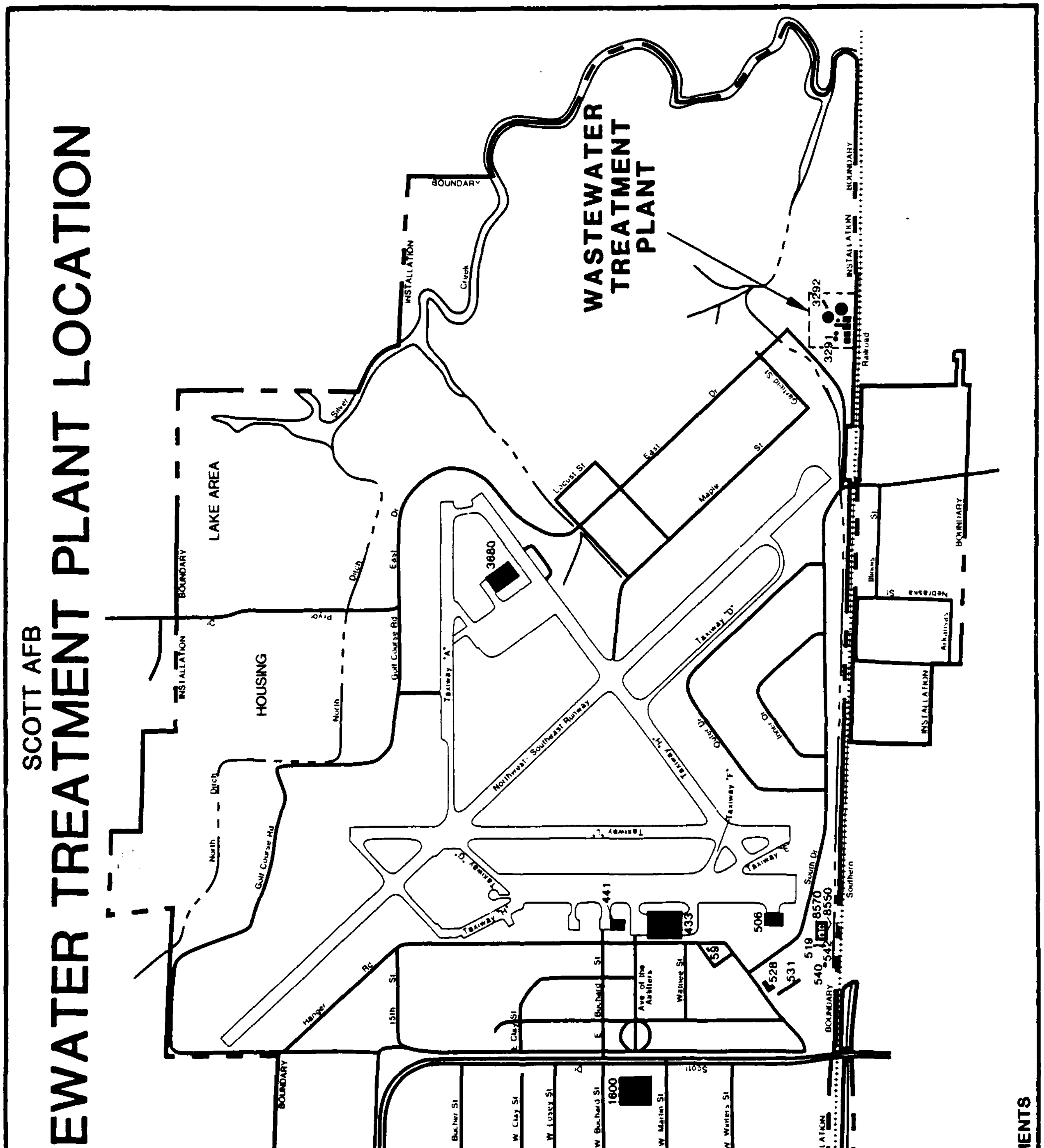
Wastewater Treatment System

Wastewater treatment on Scott AFB is performed by the wastewater treatment plant located at the southeastern corner of the base west of the landfill site (see Figure 4.6). Sanitary wastewaters, aqueous effluents from several oil-water separators, and wastewaters from several industrial shops flow by gravity and through force mains to the plant. The plant consists of manual bar screens, three comminutors, four rectangular primary settling tanks, two standard rate trickling filters operated in parallel, three circular final clarifiers, primary and secondary sludge digesters, sludge drying beds, disinfection facilities, and a 2.8 mgd rapid sand filter. The average flow is 1.5 mgd, with maximum and minimum capacities of 2.8 and 0.9 mgd, respectively. The plant operates under an NPDES permit, and discharges to Silver Creek.

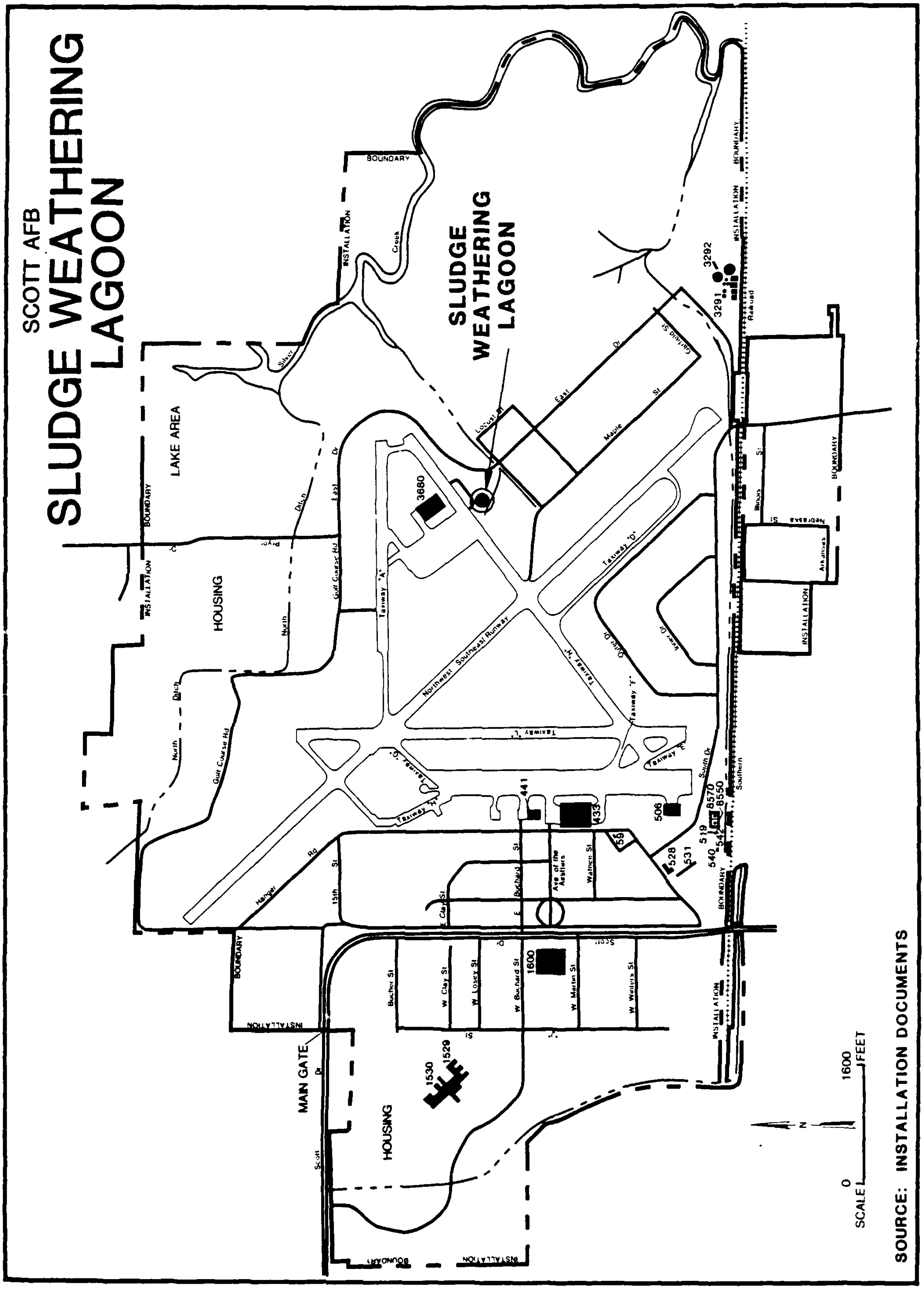
Sludge from the treatment facility is digested and spread on drying beds, and then is either transported off-base for disposal at a commercial landfill or is disposed on-base in the landfill area.

Sludge Weathering Lagoon

A small earthen sludge weathering lagoon was constructed and used southeast of POL tanks 8552 and 8554 during the mid-1970's. The location of this lagoon is shown in Figure 4.7. This lagoon was a rectangle approximately 20 feet wide by 40 feet long, and was used for only one or two years. The lagoon was intended for use in weathering tank bottoms sludge removed from the adjacent POL tanks. Reports by interviewees indicated that on occasion other industrial waste liquids, primarily scrap paint, paint thinners and waste oils, may have been disposed in this pit. The soils (down to a depth of about 2 feet) were removed from the site and taken off-base. The site was then filled in with sand and gravel to grade in the late 1970's. Visual inspection of the area during the site visit showed minor indications of the existence of this lagoon. Because of the nature of activities at the site and the lack of verification of contaminant removal, a potential for underground contaminant migration exists for this site.



ES ENGINEERING-SCIENCE



SOURCE: INSTALLATION DOCUMENTS

Storm Water Drainage System

Installation surface drainage is accomplished by overland flow to diversion structures, field tile, storm sewers, drainage ditches and culverts. Approximately 60 percent of the installation's surface drainage is directed to Silver Creek. The remaining flow is directed to Ash Creek. Flow in the North and South Ditches is controlled by strategically placed weirs. Flooding may occur seasonally in the Silver Creek lowland on the east margin of the base. Flooding may also occur in the zone immediately adjacent to Ash Creek. Installation drainage is shown in Figure 3.3.

The base wastewater treatment plant discharges to a minor tributary of Silver Creek. At times, the base drainage system receives effluent from four oil-water separators. Minor fuel spills have also been washed to the drainage system. The storm sewer system also receives water from vehicle wash racks. In view of the types and quantities of fluids and other materials discharged to the surface water drainage system, it may be concluded that the potential for contamination is slight.

Oil-Water Separators

According to Scott AFB records there are eight pre-treatment devices located on base (Table 4.4). Half of the separators discharge their water phase to sanitary sewers, the remaining four separators discharge to adjacent storm sewers. Removal of the oil phase from these separators is contracted out on an as-needed basis and the oil is disposed of off-base through DPDO. Because these are contained and managed devices, as confirmed by interviewees, no environmental contamination is associated with these sites.

EVALUATION OF PAST DISPOSAL ACTIVITIES AND FACILITIES

Review of past waste generation and management practices at Scott AFB has resulted in identification of 15 sites and/or activities which were considered as areas of concern for potential contamination and migration of contaminants.

Sites Eliminated from Further Evaluation

The sites of initial concern were evaluated using the flow chart presented in Figure 1.2. Sites not considered to have a potential for contamination were deleted from further evaluation. The sites which

TABLE 4.4
SCOTT AFB PRETREATMENT DEVICES (OIL WATER SEPARATOR)

Facility	Location	Service	Effluent To
Oil Separator	Bldg. 433	CAMS Shop	Sanitary Sewer
Oil Separator	Bldg. 1989	375 ABG Frame-Up Shop	Sanitary Sewer
Oil Separator	Bldg. 45	Power Plant	Storm Sewer
Oil Separator	Bldg. 546	POL Tanks	Storm Sewer
Grease Trap	Bldg. 53	Vehicle Maintenance	Sanitary Sewer
Grease Trap/Oil Separator	Bldg. 1907	Dining Hall	Sanitary Sewer
Oil Separator	Bldg. 3680	102 Army Reserve	Storm Sewer
Oil Separator	Bldg. 545	POL Tanks 8550 Pump House	Storm Sewer

have potential for contamination and migration of contaminants were evaluated using the Hazard Assessment Rating Methodology (HARM). Table 4.5 summarizes the results of the flow chart logic for each of the areas of initial concern.

Eight of the 15 sites assessed did not warrant further evaluation. The rationale for omitting these sites from HARM evaluation is discussed below.

The gas-foam disposal site did not warrent further evaluation because of the age (approximately 30 years) the biodegradability of fuel mixtures, and the small volumes involved. These factors lessen the potential for environmental impact.

The low-level radioactive disposal site did not warrent further evaluation since no evidence from base records or radiological monitoring of the site could substantiate that this site was ever used for disposal of low-level radioactive waste.

The transformer fluid spill site did not warrant further evaluation because the fluid and all contaminated soils and other solids in the area were removed and disposed of properly off-site.

The Explosive Ordnance Disposal Area site did not warrant further evaluation because no evidence of actual use of the site as an EOD area was found, either from base records or from personnel interviews.

The incinerator for pathological wastes, located at the base hospital, did not warrant further evaluation because of the nature of the materials incinerated and the high temperatures employed in combustion.

The wastewater treatment plant did not warrent further evaluation because it treats primarily sanitary wastewater. The effluent discharge meets NPDES requirements and sludge is digested and disposed either off-base or at the landfill site on base. Therefore, there is low potential for environmental contamination associated with the operation of the wastewater treatment plant.

The storm water drainage system at Scott Air Force Base does not warrant further evaluation because the nature of the drainage shows low potential for environmental contamination.

The oil-water separators do not warrant further evaluation because they are monitored routinely and show a low potential for environmental contamination.

TABLE 4.5
SUMMARY OF FLOW CHART LOGIC FOR AREAS OF
INITIAL HEALTH, WELFARE AND ENVIRONMENTAL CONCERN
AT SCOTT AFB

Site	Potential Hazard to Health, Welfare or Environment	Need for Further IRP Evaluation/ Action	HARM Rating
Facility 1965 Spill Site	Y	Y	Y
Facility 8550 Spill Site	Y	Y	Y
Sludge Weathering Lagoon	Y	Y	Y
Fire Protection Training Area No. 1	Y	Y	Y
Fire Protection Training Area No. 2	Y	Y	Y
Fire Protection Training Area No. 3	Y	Y	Y
Landfill	Y	Y	Y
Gas-Foam Spill Site	N	N	N
Low-Level Radioactive Waste Burial Site	N	N	N
Explosive Ordnance Disposal Area	N	N	N
Transformer Fluid Spill Site	N	N	N
Incinerator	N	N	N
Wastewater Treatment System	N	N	N
Storm Water Drainage System	N	N	N
Oil-Water Separators	N	N	N

Source: Engineering-Science

Sites Evaluated Using HARM

The remaining seven sites identified in Table 4.5 were evaluated using the Hazard Assessment Rating Methodology. The HARM process takes into account characteristics of potential receptors, waste characteristics, pathways for migration, and specific characteristics of the site related to waste management practices. Results of the HARM analysis for the sites are summarized in Table 4.6.

The procedures used in the HARM system are outlined in Appendix G and the specific rating forms for the seven sites at Scott AFB are presented in Appendix H. The HARM system is designed to indicate the relative need for follow-on action.

TABLE 4.6
SUMMARY OF HARM SCORES FOR
POTENTIAL CONTAMINATION SITES
AT SCOTT AFB

Rank	Site	Receptor Subscore	Waste Charac-teristics Subscore	Pathways Subscore	Waste Management Factor	HARM Score
1	Fire Protection Training Area No. 2	72	100	56	1.00	76
2	Landfill	72	80	67	1.00	73
3	Fire Protection Training Area No. 1	61	80	56	1.00	66
4	Facility 8550 Spill Site	69	80	48	0.95	62
5	Fire Protection Training Area No. 3	56	64	56	1.00	59
6	Facility 1965 Spill Site	69	48	48	0.95	52
7	Sludge Weathering Lagoon	56	36	56	0.95	47

Source: Engineering-Science

SECTION 5

CONCLUSIONS

The goal of the IRP Phase I study is to identify sites where there is potential for environmental contamination resulting from past waste disposal practices and to assess the probability of contamination migration from these sites. The conclusions given below are based on field inspections; review of records and files; review of the environmental setting; interviews with base personnel, past employees and local, state and federal government employees; and assessments using the HARM system. Table 5.1 contains a list of the potential contamination sources identified at Scott AFB and a summary of the HARM scores for those sites.

FIRE PROTECTION TRAINING AREA NO. 2

There is sufficient evidence that the Fire Protection Training Area No. 2 site has potential for creating environmental contamination and a follow-on investigation is warranted. During the period of use of this site, waste combustibles, including paint thinners and oils, were used as fuels and were deposited directly onto the ground prior to ignition.

Site geology consists of a moderate (twenty-foot) mantle of loess overlying glacial till. The loess is a wind-blown silt or silt and clay; the till is a hard, dense mixture of clay, silt, sand and gravel with infrequent sandy lenses enclosed. The sandy lenses, if present, form the usable aquifer at this site. The depth to ground water in this area ranges from five to fifteen feet below grade. This site received a HARM score of 76.

LANDFILL

There is sufficient evidence that the landfill site has potential for creating environmental contamination and a follow-on investigation

TABLE 5.1
SITES EVALUATED USING THE
HAZARD ASSESSMENT RATING METHODOLOGY
SCOTT AFB

Rank	Site	Operation Period	HARM Score(1)
1	Fire Protection Training Area No. 2	1953-1969	76
2	Landfill	Early 1940's-Present	73
3	Fire Protection Training Area No. 1	1942-1952	66
4	Facility 8550 Spill Site	1977	62
5	Fire Protection Training Area No. 3	1969-Present	59
6	Facility 1965 Spill Site	Mid 1970's	52
7	Sludge Weathering Lagoon	1975-1981	47

(1) This ranking was performed according to the Hazard Assessment Rating Methodology (HARM) described in Appendix G. Individual rating forms are in Appendix H.

is warranted. The landfill site was used for over 30 years; during the period of use instances of industrial waste disposal in the landfill were reported.

Local geology is dominated by modern alluvium, a mixture of clay, silt, sand and gravel containing discontinuous sand and gravel layers. Ground-water levels are typically shallow in the range of one to five feet below grade. The alluvial aquifer probably discharges to adjacent surface water. This site received a HARM score of 73.

FIRE PROTECTION TRAINING AREA NO. 1

There is sufficient evidence that the Fire Protection Training Area No. 1 site has potential for creating environmental contamination and a follow-on investigation is warranted. This site was used for fire protection training from the early 1940's until the early 1950's. During this period fuels, including combustible industrial wastes such as paint thinners and oils, were deposited on to the ground prior to ignition.

Site geology consists of a moderate (twenty-foot) mantle of loess overlying glacial till. The loess is a wind-blown silt or silt and clay; the till is a hard, dense mixture of clay, silt, sand and gravel with infrequent sandy lenses enclosed. The sandy lenses, if present, form the usable aquifer at this site. The depth to ground water in this area ranges from five to fifteen feet below grade. This site received a HARM score of 66.

FACILITY 8550 SPILL SITE

There is sufficient evidence that the Facility 8550 Spill Site has potential for creating environmental contamination and a follow-on investigation is warranted. Approximately 20,000 gallons of JP-4 were spilled in the late 1970's at this site due to a faulty tank valve. Although large amounts of fuel were recovered, approximately 12,000 gallons were not accounted for at this site.

Site geology consists of a moderate (twenty-foot) mantle of loess overlying glacial till. The loess is a wind-blown silt or silt and clay; the till is a hard, dense mixture of clay, silt, sand and gravel with infrequent sandy lenses enclosed. The sandy lenses, if present, form the usable aquifer at this site. The depth to ground water in this area ranges from five to fifteen feet below grade. This site received a HARM score of 62.

FIRE PROTECTION TRAINING AREA NO. 3

There is sufficient evidence that the Fire Protection Training Area No. 3 site has potential for creating environmental contamination and a follow-on investigation is warranted. This site has been used for fire protection training exercises since the late 1960's, and until 1979 did not have an unburned fuel recovery facility.

Site geology consists of a moderate (twenty-foot) mantle of loess overlying glacial till. The loess is a wind-blown silt or silt and clay; the till is a hard, dense mixture of clay, silt, sand and gravel with infrequent sandy lenses enclosed. The sandy lenses, if present, form the usable aquifer at this site. The depth to ground water in this area ranges from five to fifteen feet below grade. This site received a HARM score of 59.

FACILITY 1965 SPILL SITE

There is sufficient evidence that the Facility 1965 Spill Site has potential for creating environmental contamination and a follow-on investigation is warranted. At this spill site, an unknown quantity of motor fuel was lost in the mid 1970's due to a faulty tank fitting. Some clean-up at the site was initiated and the tank was repaired. However, due to the time lag in discovering the leakage and the unverified clean-up at the site, the potential for contamination still exists.

Site geology consists of a moderate (twenty-foot) mantle of loess overlying glacial till. The loess is a wind-blown silt or silt and clay; the till is a hard, dense mixture of clay, silt, sand and gravel with infrequent sandy lenses enclosed. The sandy lenses, if present, form the usable aquifer at this site. The depth to ground water in this area ranges from five to fifteen feet below grade. This site received a HARM score of 52.

SLUDGE WEATHERING LAGOON

There is sufficient evidence that the sludge weathering lagoon site has potential for creating environmental contamination and a follow-on investigation is warranted. Upon closing of the site, the sludges and other waste materials contained in the lagoon were removed along with some contaminated soils. The site was filled and graded. No samples were taken, however, to verify that decontamination was complete.

Site geology consists of a moderate (twenty-foot) mantle of loess overlying glacial till. The loess is a wind-blown silt or silt and clay; the till is a hard, dense mixture of clay, silt, sand and gravel with infrequent sandy lenses enclosed. The sandy lenses, if present, form the usable aquifer at this site. The depth to ground water in this area ranges from five to fifteen feet below grade. The site received a HARM score of 47.

SECTION 6

RECOMMENDATIONS

Seven sites were identified at Scott AFB as having the potential for environmental contamination. These sites have been evaluated and rated using the HARM system which assesses their relative potential for contamination and provides the basis for determining the need for additional Phase II IRP investigations. These sites have sufficient potential to create environmental contamination and warrant Phase II investigations. The sites evaluated have been reviewed concerning land use restrictions which may be applicable.

RECOMMENDED PHASE II MONITORING

The subsequent recommendations are made to further assess the potential for environmental contamination from waste disposal areas at Scott AFB. The recommended actions are sampling and monitoring programs to determine if contamination does exist at the site. If contamination is identified in this first-step investigation, the Phase II sampling program will probably need to be expanded to define the extent and type of contamination. The recommended monitoring program is summarized in Table 6.1 and discussed below for each site.

The hydrogeologic conditions present at each waste disposal facility are entirely site-specific due to variations in geology, topography, land use modifications, etc. These natural conditions or man-made changes in the local environmental setting must be clearly understood in order to design an effective ground-water quality monitoring system. At present, these site-specific conditions existing at Scott AFB waste disposal or hazardous material management facilities are unknown.

Soil test borings and temporary observation wells may be employed to obtain site-specific information. A systematic, more efficient and

TABLE 6.1
RECOMMENDED MONITORING PROGRAM FOR PHASE II IRP
AT SCOTT AFB

	Site (Rating Score)	Recommended Monitoring Program
1.	Fire Protection Training Area No. 2 (76)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install four wells based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.
2.	Landfill (73)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install ten wells at selected locations around the facility, based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.
3.	Fire Protection Training Area No. 1 (66)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install four wells based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.
4.	Facility 8550 Spill Site (62)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install four wells, based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.
5.	Fire Protection Training Area No. 3 (59)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install four wells, based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.

TABLE 6.1
RECOMMENDED MONITORING PROGRAM FOR PHASE II IRP
AT SCOTT AFB
(Continued)

	Site (Rating Score)	Recommended Monitoring Program
6.	Facility 1965 Spill Site (52)	Conduct geophysical survey to determine subsurface conditions and optimum monitoring well locations. Install four wells, based upon site-specific hydrogeologic conditions. Analyze water samples for the parameters listed in Table 6.2.
7.	Sludge Weathering Lagoon (47)	Conduct geophysical survey to determine depth to ground-water. Locate four soil borings within site boundary. Analyze borings for parameters listed in Table 6.2.

Source: Engineering-Science

cost-effective approach utilizes geophysical techniques to obtain local subsurface information. Electrical resistivity (ER) and electromagnetic conductivity (EMC) are recommended geophysical instruments that employ indirect measurement technologies to collect data describing subsurface material electrical properties.

ER and EMC devices respond to changes or contrasts in either the horizontal or vertical planes. These measurements may be correlated to direct sampling methods, such as test borings. Both methods may be utilized in shallow situations (less than thirty feet deep) to determine stratigraphic changes, depth to ground water, aquifer thickness and contaminated zones if sufficient contrast in the local geology exists. ER may be employed in more complicated terrains or in situations where deep contamination is suspected. Using either geophysical technique, wells may then be systematically installed in zones indicated by the appropriate geophysical technique. This approach to monitoring program design significantly reduces both costs and schedules.

The use of geophysical techniques at waste disposal facilities has been well documented in the technical literature. A USEPA guidance manual describes the capabilities and limitations of electrical resistivity at waste disposal facilities and is applicable to the probable conditions that may be encountered at Scott AFB (USEPA, 1978). Other geophysical methodologies can be utilized for specialized purposes - for example, a metal detector may be used in shallow settings to locate buried ferrous materials and the magnetometer may be utilized to locate either buried objects or disturbed zones (backfilled trenches or pits) in shallow and deep settings.

Ground-water quality monitoring systems must be designed for the site-specific conditions existing at a waste disposal facility. Guidelines for well system design have been published in several USEPA reports that contain guidelines applicable to conditions at Scott AFB. For large areas/landfills, or for areas with multiple ground-water flow directions, it is recommended that more than the usual four wells be required (one upgradient and three downgradient, from RCRA, Subpart F, Section 265.91, "Ground-water Monitoring System").

These guidelines also recommend that where multiple flow directions exist beneath a site, geophysical methods should be utilized to guide well placement (both the physical location and the screened interval). In situations where the site is physically large or has an unusual geometry and therefore has a long down-gradient dimension (such as the Scott landfill), the general rule is to install at a minimum one monitoring well for each 250 feet of downgradient frontage (USEPA, 1980). A well spacing of 250 feet is considered to be a maximum allowable interval between wells, assuming that local hydrogeologic conditions are reasonably uniform. Wells must be installed at closer intervals if the site subsurface conditions are determined to be complex.

Fire Protection Training Area No. 2

It is recommended that four monitoring wells be installed at FPTA No. 2 site (one upgradient and three downgradient). A geophysical survey is recommended to determine subsurface conditions prior to well installation. The parameters proposed to be analyzed for in ground-water samples (Table 6.2) will serve as a screening to determine contamination at these sites. More extensive tests may be required if positive results are obtained in the initial sampling.

Landfill

Ten monitoring wells (one upgradient and nine downgradient) constructed into the upper aquifer are recommended because of the large downgradient dimensions. A geophysical survey is recommended to define the extent and subsurface characteristics of this disposal site and to aid in determining efficient monitoring well locations. The results of the geophysical survey should be used to evaluate whether ten wells is the appropriate number of wells to monitor contaminants associated with this site.

The parameters to be analyzed for in the ground-water samples (Table 6.2) are intended as a screening approach to determine potential contamination. Further action may be required upon analyses of initial sampling.

TABLE 6.2
RECOMMENDED LIST OF ANALYTICAL PARAMETERS FOR PHASE II IRP
AT SCOTT AFB

<u>Fire Protection Training Area No. 2</u>

pH
Oil and Grease
Total Organic Carbon
Lead
EPA Methods 601, 602

<u>Landfill</u>

pH
Total Dissolved Solids
Oil and Grease
PCB
Metals (Cd, Cr, Fe, Mn, Ni, As, Hg, Zn)
Phenols
Lead
EPA Method 601
Total Organic Carbon

<u>Fire Protection Training Area No. 1</u>

pH
Oil and Grease
Total Organic Carbon
Lead
EPA Methods 601, 602

<u>Facility 8550 Spill Site</u>

pH
Oil and Grease
Total Organic Carbon
Lead

<u>Fire Protection Training Area No. 3</u>

pH
Oil and Grease
Total Organic Carbon
Lead
EPA Methods 601, 602

TABLE 6.2

RECOMMENDED LIST OF ANALYTICAL PARAMETERS FOR PHASE II IRP AT SCOTT AFB

Facility 1965 Spill Site

pH
Oil and Grease
Total Organic Carbon
Lead

Sludge Weathering Lagoon

pH
Oil and Grease
EPA Methods 8010
EPA Methods 8020
Metals (Cd, Cr, Fe, Mn, Ni, As, Hg, Zn)

Source: Engineering-Science

Fire Protection Training Area No. 1

It is recommended that four monitoring wells be installed at FPTA No. 1 site (one upgradient and three downgradient). A geophysical survey is recommended to determine subsurface conditions prior to well installation. The parameters proposed to be analyzed for in groundwater samples (Table 6.2) will serve as a screening to determine contamination at these sites. More extensive tests may be required if positive results are obtained in the initial sampling.

Facility 8550 Spill Site

It is recommended that four wells be installed at the spill site (one upgradient and three downgradient). A geophysical survey is recommended for this site to establish appropriate locations for each well. Table 6.2 lists the parameters that should be analyzed for in the groundwater recovered from the wells.

Fire Protection Training Area No. 3

It is recommended that four monitoring wells be installed at FPTA No. 3 site (one upgradient and three downgradient). A geophysical survey is recommended to determine subsurface conditions prior to well installation. The parameters proposed to be analyzed for in groundwater samples (Table 6.2) will serve as a screening to determine contamination at these sites. More extensive tests may be required if positive results are obtained in the initial sampling.

Facility 1965 Spill Site

It is recommended that four wells be installed at the spill site (one upgradient and three downgradient). A geophysical survey is recommended for this site to establish appropriate locations for each well. Table 6.2 lists the parameters that should be analyzed for in the groundwater recovered from the wells.

Sludge Weathering Lagoon

Because of the mobility of solvents that were disposed of at the site, it is recommended that a minimum of four soil borings should be taken from this site. Each boring should be taken down to the depth of the uppermost aquifer and located within the old lagoon boundaries. Beginning with the first foot of undisturbed soil, every other foot of boring should be individually composited and analyzed for the parameters listed in Table 6.2 for this site. Further sampling and analysis may be required upon analysis of initial sampling.

RECOMMENDED GUIDELINES FOR LAND USE RESTRICTIONS

It is desirable to have land use restrictions for the identified sites to (1) provide continued protection of human health, welfare, and environment, (2) insure that migration of potential contaminants is not promoted through improper land uses, (3) facilitate compatible development of future USAF facilities and (4) allow identification of property which may be proposed for excess or outlease.

The recommended guidelines for land use restrictions at each identified disposal site at Scott AFB are presented in Table 6.3. A description of the land use restriction guidelines is included in Table 6.4. Land use restrictions at sites recommended for on-site monitoring should be re-evaluated upon completion of the Phase II program and appropriate changes made.

TABLE 6.3
RECOMMENDED GUIDELINES FOR FUTURE LAND USE RESTRICTIONS[1]
SCOTT AFB

Site Name	Construction	Excavation	Wells	Agriculture	Silviculture	Water Infiltration	Recreation	Burning	Disposal Operations	Vehicular Traffic	Material Storage	Housing
FPTA No. 1	NR	NR	R	NR	R	R	R	NR	R[2]	NR	NR[3]	R
FPTA No. 2	NR	NR	R	NR	R	R	R	NR	R[2]	NR	NR[3]	R
FPTA No. 3	NR	NR	R	NR	R	R	R	PU	PU	NR	NR[3]	R
Landfill	R	R	R	R	R	R	R	R	R[2]	R	NR[3]	R
Facility 1965 Spill Site	R	NR	R	R	R	R	R	NR	R	NR	NR[3]	R
Facility 1965 Spill Site	R	NR	R	NR	R	R	R	NR	R	NR	NR[3]	R
Sludge Weathering Lagoon	R	NR	R	R	R	R	R	NR	R	NR	NR[3]	R

Notes: NA = Not Applicable
NR = No Restriction
PU = Present Use
R = Restriction

(1) See Table 6.4 for description of guidelines.
(2) Restrict for all wastes except for construction/demolition debris.
(3) No restrictions on solid materials but liquids undesirable.

Source: Engineering-Science

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APPENDIX A

BIOGRAPHICAL DATA

BIOGRAPHICAL DATA

Eric Heinman Snider

Manager, Industrial Waste Department

Personal Information

Date of Birth: 14 April 1951

Education

B.S. in Chemistry (Magna Cum Laude), 1973, Clemson University, Clemson, S.C.
M.S. in Chemical Engineering, 1975, Clemson University, Clemson, S.C.
Ph.D. in Chemical Engineering, 1978, Clemson University, Clemson, S.C.

Professional Affiliations

Registered Professional Engineer (Oklahoma No. 13499, Georgia No. 14228)
Diplomate, American Academy of Environmental Engineers
Certified Professional Chemist, A.I.C.
American Institute of Chemical Engineers
American Chemical Society
American Society for Engineering Education
Society of Automotive Engineers

Honorary Affiliations

Sigma Xi
Tau Beta Pi
Phi Kappa Phi
Who's Who in the South and Southwest, 1981
Outstanding Young Men of America, 1983

Experience Record

1971-1978 Texidyne, Inc., Clemson, S.C., Staff Chemist and Consultant. Responsible for overall management of laboratory facilities and some wastewater engineering studies. Performed incinerator performance studies. Participated in a study to examine feasibility of process wastewater recycle/reuse in textile finishing and dyeing operations.

Eric H. Snider (Continued)

1976-1977	Clemson University, Clemson, S.C., Chief Analyst on airborne fluoride monitoring project in Chemical Engineering Department, performed for Owen-Corning Fiberglas Corp., Toledo, Ohio.
1978-1982	The University of Tulsa, Tulsa, OK., Assistant Professor of Chemical Engineering and Associate Director, University of Tulsa Environmental Protection Projects (UTEPP) Program. Normal teaching duties; research centered on specialized petroleum refinery problems of water and solid wastes and oil-water emulsions. Supervised an industry-sponsored research program in the area of oil-water emulsion breaking technologies.
1982-1983	The University of Tulsa, Tulsa, OK., Associate Professor of Chemical Engineering and Director of UTEPP Program. Normal teaching duties; researched and wrote five monographs on environmental areas; including, incineration, flotation, gravity separation, screening/sedimentation, and equalization.
1983-1984	Engineering-Science, Senior Engineer. Responsible for a wide variety of waste treatment, chemical process, resource recovery, energy, incineration and air pollution control activities for industrial and governmental clients.
1984-Date	Engineering-Science, Manager of Industrial Waste Department. Responsible for managing a department consisting of chemical, civil, and environmental engineers and scientists performing a variety of projects for industrial and municipal clients.

Publications

30 technical publications, including five technical monographs.

Biographical Data

JOHN R. ABSALON
Hydrogeologist

Personal Information

Date of Birth: 12 May 1946

Education

B.S. in Geology, 1973, Upsala College, East Orange, New Jersey

Professional Affiliations

Certified Professional Geologist (Indiana No. 46, Virginia No. 241)
Association of Engineering Geologists
Geological Society of America
National Water Well Association

Experience Record

1973-1974 Soil Testing Incorporated-Drilling Contractors, Seymour, Connecticut. Geologist. Responsible for the planning and supervision of subsurface investigations supporting geotechnical, ground-water contamination, and mineral exploitation studies in the New England area. Also managed the office staff, drillers, and the maintenance shop.

1974-1975 William F. Loftus and Associates, Englewood Cliffs, New Jersey. Engineering Geologist. Responsible for planning and management of geotechnical investigations in the northeastern U.S. and Illinois. Other duties included formal report preparation.

1975-1978 U.S. Army Environmental Hygiene Agency, Fort McPherson, Georgia. Geologist. Responsible for performance of solid waste disposal facility siting studies, non-complying waste disposal site assessments, and ground-water monitoring programs at military installations in the southeastern U.S., Texas, and Oklahoma. Also responsible for operation and management of the soil mechanics laboratory.

1978-1980 Law Engineering Testing Company, Atlanta, Georgia. Engineering Geologist/Hydrogeologist. Responsible for the project supervision of waste management, water quality assessment, geotechnical, and hydrogeologic studies at commercial, industrial, and government facilities. General experience included planning and management of several ground-water monitoring programs, John R. Absalon (Continued)

development of remedial action programs, and formulation of waste disposal facility liner system design recommendations. Performed detailed ground-water quality investigations at an Air Force installation in Georgia, a paper mill in southwestern Georgia, and industrial facilities in Tennessee.

1980-Date Engineering-Science. Hydrogeologist. Responsible for supervising efforts in waste management, solid waste disposal, ground-water contamination assessment, leachate generation, and geotechnical and hydrogeologic investigations for clients in the industrial and governmental sectors. Performed geologic investigations at twelve Air Force bases and other industrial sites to evaluate the potential for migration of hazardous materials from past waste disposal practices. Conducted RCRA ground-water monitoring studies for industrial clients and evaluated remedial action alternatives for a county landfill in Florida. Conducted quality management, hydrogeologic and ground-water quality programs for the pulp and paper industry at several mills located in the Southeast United States.

Publications and Presentations

"Practical Aspects of Ground-Water Monitoring at Existing Disposal Sites," 1980, coauthor: R.C. Starr, Proceedings of the EPA National Conference on Management of Uncontrolled Hazardous Sites, HMCRI, Silver Spring, MD.

"Improving the Reliability of Ground-Water Monitoring Systems," 1981, Proceedings of the Madison Conference of Applied Research and Practice on Municipal and Industrial Waste, University of Wisconsin-Extension, Madison, WI.

"Identification and Treatment Alternatives Evaluation for Contaminated Ground Water," 1982, coauthor: M. R. Hockenbury. Presented to Association of Engineering Geologists Symposium on Hazardous Waste Disposal, Atlanta, 17 September.

"Preliminary Assessment of Past Waste Storage and Disposal Sites," 1982, coauthor: W. G. Christopher. Presented to Association of Engineering Geologists Symposium on Hazardous Waste Disposal, Atlanta, 17 September.

"Treatment Alternatives Evaluation for Aquifer Restoration," 1983, coauthor: M. R. Hockenbury, Proceedings of the Third National Symposium on Aquifer Restoration and Ground Water Monitoring, NWWA, Worthington, OH.

Biographical Data

JAMES R. BUTNER

Environmental Scientist

Personal Information

Date of Birth: 28 September 1954

Education

B.S. Tulane University, Biological Sciences, 1976
M.S. University of Florida, Environmental Engineering Sciences, 1983

Professional Affiliations

Water Pollution Control Federation
Society of Wetlands Scientists

Experience Record

1977-1979 Horticulturalist in the Horticultural industry in Gainesville, Florida. Primary areas of experience were in botany, evaluation of the uses of native plant species, and business management.

1979-1981 Center for Wetlands, University of Florida. His involvement focused on evaluating the public health aspects of wastewater recycling through wetlands, the subject of his Master's thesis. Mr. Butner's other activities included modeling the survivorship of pathogens in surface and ground waters, vegetation analysis, and application of computer statistical software (SAS) to large data sets generated from revegetation studies of phosphate mined lands in central Florida. Mr. Butner's coursework included graduate level courses in Environmental Chemistry, Nutrients and Eutrophication, Water Resources Planning, Fortran Programming, Toxicology, Ecological Modeling and Statistics.

1982-1984 Claude Terry & Associates, Inc. (CTA). As an Environmental Scientist, his primary responsibilities were involved the collection, review and analysis of technical data and institutional issues associated with effluent discharge into wetlands. These duties were in conjunction with the production of a generic eight-state Environmental Impact Statement for Region IV EPA entitled "Freshwater Wetlands for Wastewater

Management". Other projects have involved conducting environmental inventories and recommending mitigation to preserve and protect natural resources for other EIS work. He was involved in the design of various sampling programs, the collection, analysis, and interpretation of chlorophyll and periphyton data as part of the Georgia Statewide Nonpoint Source Study, and training laboratory personnel in wet chemistry techniques.

1984-Present Engineering-Science, Inc. Environmental Scientist responsible for the conduct of water and wastewater sampling programs and analyses, quality control, laboratory process evaluations, and evaluation of other environmental assessment data. Involved in the development of environmental studies, inventories, and evaluations for municipal, industrial, and Federal government projects.

Publications

Coauthor of the publication (1983), "Survival of Virus and Enteric Bacteria in Groundwater", Journal of Groundwater.

Paper entitled, "Freshwater Wetlands for Wastewater Management: An integrated framework for decision-making and wetlands protection", presented at the 1984 Research Triangle Conference on Environmental Technology, Raleigh, N.C., March 1984.

BIOGRAPHICAL DATA

Rocco M. Palazzolo
Environmental Engineer

Personal Information

Date of Birth: 18 September 1956

Education

B.S. in Civil Engineering, Wayne State University, 1981
M.S. in Environmental Engineering, Georgia Institute of Technology, 1983.

Professional Affiliations

Water Pollution Control Federation

Honorary Affiliation

Tau Beta Pi

Experience Record

1974-1976 R. D. Palazzolo Associates, Consulting Engineers, P.C., Detroit, Michigan. Engineering Assistant responsible for vendor follow-up during expansion of an transmission manufacturing plant. Acted as liaison between automobile manufacturer and vendors of machine tools, fixtures, gages, etc. Duties included preparation of weekly progress reports, maintenance of records, informing vendors of design changes, etc.

1978-1981 R. D. Palazzolo Associates, Consulting Engineers, P.C., Detroit, Michigan. Checked designs of machine tools, fixtures, gages, and materials handling equipment. Also served as Manufacturers' Representative for tool and die shops.

1981-1983 Georgia Institute of Technology, Atlanta, GA. Graduate Research Assistant in projects including development of a means to improve hydraulic behavior of fluidized bed reactors, review and experimental testing of hydraulic models of fluidization and sedimentation, and a study of absorption enhanced anaerobic treatment of coal gassification wastewater. Responsible for design and construction of experimental apparatus, system operation and maintenance, experimental measurements and analyses, review of

Rocco M. Palazzolo

data and preparation of reports. Also taught undergraduate classes in water distribution and sewer system collection design.

1983-Date Engineering-Science, Inc., Atlanta, GA. Project Engineer responsible for preparation of a RCRA Part B Permit Application. Work included review of hazardous waste management practices and facilities at the plant for compliance with federal and state regulations. Hazardous waste management processes included container and tank storage, disposal in an on-site secure landfill, and treatment by incineration.

Project Engineer responsible for investigation of environmental impact of a closed garbage and rubbish landfill on a proposed apartment development, including investigation of pollution of ground water and surface water in a nearby stream. Work included development of the history of the landfill, field sampling and measurements, review of data, and presentation of recommendations.

Publications

Khudenko, B.M. and Palazzolo, R.M. "Hydrodynamics of Fluidized Bed Reactors for Wastewater Treatment". Proceedings: First International Conference on Fixed Film Biological Processes, April 20-23, 1982, Kings Island, Ohio, Vol. 3, pp. 1288-1334.

Palazzolo, R.M. and Khudenko, B.M. "Development of A New Type of Fluidized Bed Reactor". International Conference on Scale-up of Water and Wastewater Treatment Processes, March 17 and 18, 1983, Edmonton, Alberta, Canada.

APPENDIX B

LIST OF INTERVIEWEES AND OUTSIDE AGENCY CONTACTS

TABLE B.1
LIST OF INTERVIEWEES

Position	Years of Service at this Installation
Scott AFB	
1. Civilian, Chief of Environmental Control and Planning Section	11
2. Civilian, Chief of Graphics Shop	7
3. Civilian, Chief of Photography Shop	24
4. NCOIC, Black and White Process and Print Shop	2
5. NCOIC, Color Reproduction Shop	2
6. Base Bioenvironmental Engineer	1
7. Assistant Base Bioenvironmental Engineer	1
8. NCOIC, Base Bioenvironmental Engineer	1
9. Civilian, CE Paint Shop Foreman	18
10. Civilian, CE Exterior Electric Foreman	32
11. Civilian, CE Grounds Foreman	15
12. Civilian, CE Grounds Technician	17
13. NCOIC, Entomology	1
14. Civilian, Entomology Foreman	9
15. Civilian, Foreman Liquid Fuels Maintenance	3
16. Civilian, Supervisor Bulk Storage	9
17. Civilian, CE Construction Inspection	11
18. Civilian, Maintenance Foreman 102 Army Air Reserve	8
19. Civilian, Manager of Aero Club	3
20. Civilian, CE Electrical Supervisor	28
21. Civilian, Deputy Chief of CE Operations	21
22. Civilian, Supervisor CAMS Pneudraulic Shop	12
23. Civilian, Supervisor CAMS Repair and Reclamation Shop	29
24. Civilian, Supervisor CAMS Fabrication Branch	17
25. Civilian, Foreman CAMS Paint Shop	14
26. NCOIC, CAMS Wheel and Tire	4
27. Civilian, Supervisor CAMS PMEL	15
28. Civilian, Supervisor CAMS AGE	23
29. Civilian, Construction Supv. Retired	14
30. Civilian, Mechanical Supv.	3
31. Civilian, Facilities Management	12
32. Civilian, Vehicle Operator, Golf Course Maintenance	16
33. Civilian, Chief of DPDO	1
34. Civilian, Wing Historian	1
35. NCO, Supply-Ammunitions	3

TABLE B.1
LIST OF INTERVIEWEES
(Continued)

	Position	Years of Service at this Installation
36.	Civilian, DPDO Work Leader, Retired	34
37.	Civilian, Chief of DPDO, Retired	15
38.	Civilian, Foreman of Wastewater Treatment Plant, Retired	26
39.	Civilian, Utilities Supervisor	27
40.	Civilian, Chief of Refuse Shop, Retired	30
41.	NCO, Disaster Control	2
42.	Civilian, Real Property Officer	4
43.	Civilian, Realty Specialist	25
44.	Civilian, Natural Resources Planner	4
45.	Civilian, Foreman of Wastewater Treatment Plant	10
46.	Civilian, Wastewater Treatment Plant Operator	4
47.	Civilian, Wastewater Treatment Plant Operator	26
48.	Civilian, Wastewater Treatment Plant Operator	20
49.	Civilian, Assistant Chief of Fire Department	9
50.	Civilian, Assistant Chief of Fire Department	28
51.	Civilian, Fireman	25
52.	Civilian, Fireman, Retired	36
53.	Civilian, Property Utilization Specialist	4
54.	Civilian, Equipment Operator, Retired	20
55.	Civilian, Fireman, Retired	23
56.	Civilian, Communications Command Historian	6
57.	Civilian, Chief of Refuse Shop	28
58.	Civilian, Chief of Fire Department	1
59.	NCOIC, Medical Photography	2
60.	Civilian, Auto Hobby Shop Supervisor	3
61.	NCOIC, Jet Engine Shop	9
62.	NCOIC, Jet Engine Shop	8
63.	Civilian, Technician at Jet Engine Shop	24
64.	Civilian, Technician at Jet Engine Shop	28
65.	Civilian, Allied Trades Shop	3
66.	Civilian, Allied Trades/Base Vehicle Maint.	31
67.	NCOIC, Radar/Navaids	4
68.	NCOIC, Transmitter Maintenance	4
69.	Civilian, Navaids Maintenance	30
70.	Civilian, Retired from CAMS Shop	25
71.	Civilian, Retired from CAMS Shop	24

TABLE B.1
LIST OF INTERVIEWEES
(Continued)

Position	Years of Service at this Installation
St. Louis AFS, Defense Mapping Agency	
1. Mechanic Foreman Vehicle Maintenance, Logistics	27
2. General Foreman Trades, Crafts and Utilities Branch, Facilities Engineering	19
3. Work Leader Heating Section 2, Facilities Engineering	12
4. Painter, Facilities Engineering	7
5. Foreman Pipefitting Section, Facilities Engineering	17
6. Work Leader Boiler Room Mechanic, Facilities Engineering	8
7. Supervisor Air Conditioning Section, Facilities Engineering	30
8. Safety Manager, Scientific Data	3
9. General Foreman Heating, Ventilation and Air Conditioning Section, Facilities Engineering	9
10. Director, Facilities Engineering	4
11. Civil Engineer, Facilities Engineering	6
12. Chief Engineering and Construction Division, Facilities Engineering	9
13. Work Leader Air Conditioning Section, Facilities Engineering	9
14. Entomologist, Facilities Engineering	7
15. General Foreman Photo/Plate Division, Graphic Arts	34
16. Photo Solution Mixer, Graphic Arts	30
17. Graphic Arts Assistant Safety Officer	1
18. Chemist, Scientific Data	17
19. General Foreman Offset Press Operator, Graphic Arts	5

TABLE B.2
OUTSIDE AGENCY CONTACTS

Kevin Pierard, Geologist RCRA/Hazardous Waste Enforcement Section U.S. Environmental Protection Agency, Region V 230 South Dearborn Street Chicago, IL 60604 312/886-4667
Librarian Illinois State Geological Survey 615 East Peabody Drive Champaign, IL 61820 217/344-1481
Robert C. Kohlhase, Assistant Hydrologist Ground-Water Section Illinois State Water Survey 605 East Springfield Avenue Champaign, IL 61820 217/333-0162
Brenda Brown, Sub Region Supervisor Division of Public Water Supplies Illinois Environmental Protection Agency, Region VI 117 West Main Street Collinsville, IL 62234 618/345-0700
Nick Mahlandt, Environmental Protection Engineer Division of Water Pollution Control Illinois Environmental Protection Agency, Region VI 117 West Main Street Collinsville, IL 62234 618/345-6220

APPENDIX C

TENANT ORGANIZATIONS AND MISSIONS

APPENDIX C

TENANT ORGANIZATIONS AND MISSIONS

1. Military Airlift Command.

The overall mission of the Military Airlift Command is to maintain in a constant state of readiness the military airlift system and other systems and services assigned by competent authority. Systems and services assigned to the Military Airlift Command include: Air Weather Service, Aerospace Rescue and Recovery Service, Aerospace Audiovisual Service, and Special Aircrew Training.

2. Headquarters AirForce Communications Command.

The mission of HQ Air Force Communications Command is to provide communications-electronics, automated data processing, and air traffic control support and services for the Air Force, other agencies and designated command and control systems and to manage and maintain Air Force assigned facilities of the Defense Communications System.

3. Airlift Information Systems Division

AISD manages communications-electronics equipment, facilities and systems in support of DOD, USAF and other governmental and civilian agencies. The AISD mission is to develop and implement Automated Data Processing (ADP) systems in MAC and to operate the Scott AFB computer center.

4. 1866 Facility Checking Squadron (AFCC)

The mission of the 1866th FCS includes flight inspections and ground technical evaluations of military navigational aids, air traffic control facilities, and weather radar as well as operational evaluations of air traffic control systems.

5. Headquarters 1842 Electronics Engineering Group (AFCC).

The 1842 EEG has the mission to provide communications-electronics systems engineering and consultive engineering support for AFCC.

6. 2000 Management Engineering Squadron (AFCC).

The mission of the 2000 MES is that of developing manpower standards for the command's net worth at 596 units worldwide.

7. USAF Medical Center (MAC).

The mission of the USAF Medical Center Scott is to provide medical services support to the Host Wing, HQ MAC, HQ AFCC and other tenant organizations.

8. 1st Aeromedical Staging Flight.

The mission of the 1st Aeromedical Staging Flight (ASF) is to provide accommodations for patients transiting from treatment on their way back to their originating hospital. The ASF also provides ground transportation and medical care to in-patients who are destined for neighboring referral hospitals in the area, and provides medical and nursing care for patients with various medical conditions.

9. 52nd Medical Service Squadron (AFRES).

The Peacetime mission of the 52nd Medical Service Squadron is to recruit, train and retain personnel to accomplish medical support mission.

10. Civil Air Patrol.

The CAP provides all aspects of search and rescue communications.

11. USAF Judiciary Area Defense Counsel.

Area Defense Counsel mission is to act as defense counsel in various situations.

12. Defense Property Disposal Service.

The mission of the Defense Property Disposal Service is to dispose of all DOD excess property including scrap within 150 mile radius of Scott AFB.

13. Headquarters 932 Aeromedical Airlift Group (Assoc) (AFRES).

The 932 Aeromedical #6 Airlift Group recruits and trains reservists to augment the aeromedical airlift mission of the 375 AAW and supervises training of Medical Service Squadron, Civil Engineering Squadron (Prime BEEF and RIBS), and a Communications Flight.

14. 2400 Reserve Readiness Mobility Squadron.

The 2400 Reserve Readiness Mobility Squadron, functions as a liaisen between HQ AFRES Current Operations (Robin AFB, GA) and HQ MAC Current Operations.

15. Headquarters Air Force Audit Agency.

The mission of HQ Airforce Audit Agency is to provide all levels of Air Force management with evaluations of the economy, effectiveness and efficiency with which managerial responsibilities are carried out.

16. Air Force Office of Special Investigations, District 5.

AFOSI Detachment 516 has the mission of conducting investigations and providing investigative reports to serviced commanders for appropriate command action.

17. 102d United States Army Reserve.

The mission of the 102d USARASF is to provide support for aviation administration, operations, training, maintenance and supply services for aviators, aviation units and aviation elements of non-aviation units.

18. 281st Aviation Company (CS).

The 281st Aviation Company provides training and corps support aviation assets.

19. <u>219th Transportation Company (ACFT MAINT) (IS).</u>

The 219th Transportation Company (ACFT MAINT) (IS) is an Army Reserve unit whose mission is to provide Intermediate Level rotary wing aircraft maintenance and aircraft repair parts supply for the 219th and supported units.

20. <u>Defense Commercial Communications Office.</u>

Defense Commercial Communications Office (DECCO) has the mission to lease, pay and account for commercial communications services, facilities and equipment for the Department of Defense and other agencies.

21. <u>Defense Communications Agency Operating Center, Allocation and Engineering Directorate.</u>

The mission of the Defense Communications Agency Operations Center, Allocations and Engineering Directorate (DCAOC AED) is to perform system engineering for the Defense Communications System.

22. <u>Det 1, 1361st Audiovisual Squadron (AAVS).</u>

Det 1, 1361 AVS provides audiovisual support to various organizations of Scott AFB.

23. <u>USAF Environmental Technical Applications Center (MAC).</u>

USAFETAC's mission is to assess the natural environment from a historical perspective and advise the U. S. Air Force, the U. S. Army, and other agencies on its effects.

24. <u>Louisville District, Corps of Engineers.</u>

The Louisville District, Corps of Engineers provides contract administration, coordination, inspection and quality assurance on contracts at Scott AFB and the Southwestern Illinois vicinity.

25. The American Red Cross.

At Scott AFB, the American National Red Cross provides verification for the military for emergency leave purposes, financial assistance to the serviceman, counsels in family problems, transfer or hardship discharges, and volunteer training.

26. Armed Services Medical Regulating Office (ASMRO).

ASMRO's mission is to monitor and control the transfer of uniformed services patients to and within the continental United States and to coordinate the transfer of active duty members being separated for physical disability to Veterans Administration medical treatment facilities.

27. Field Training Detachment 310, OLA.

The mission of the 310 FTD is to support the 375 AAW and MAC with CT-39A weapon system and associated courses.

28. 1974 Information Systems Group (AFCC).

Telephone, air traffic control and other base communications services are provided by the 1974 Information Systems Group (AFCC). The 1974 ISG has the responsibility for developing and implementing all communications-electronics programs for Scott AFB. The 1974 ISG provides automatic data processing services to the HQ AFCC staff, division headquarters, selected AFCC units and other USAF-designated organizations.

29. 1817 Reserve Advisor Squadron.

The mission of the 1817 Reserve Advisor Squadron is to assist in the implementation of training procedures, monitor and assist in safety programs and determine progress towards operational readiness of various units.

30. Air Lift Operations School.

The mission of the Airlift Operations School (AOS) is to prepare selected officers, NCOs and civilians to conduct and manage strategic and tactical airlift combat operations.

31. <u>1600 Management Engineering Squadron.</u>

The mission of the 1600 MES is to provide base-level manpower, organization and management engineering support to Military Airlift Command units.

32. <u>Headquarters 23rd Air Force/Headquarters Air Rescue and Recovery.</u>

The mission of HQ 23 AF/HQ ARRS is to exercise command over assigned and attached ARRS, special operations, aeromedical and operational support airlift, and to support forces worldwide to achieve and maintain a capability to perform combat search and rescue, missile site support, aerial sampling, weather reconnaissance, unconventional warfare and other operations.

33. <u>Headquarters Air Weather Service.</u>

The mission of HQ Air Weather Service is to direct the operations of 6 weather wings, 18 weather squadrons, 1 weather forecast center, 1 applied climatology center and about 270 detachments and operating locations worldwide who provide weather support essential to the planning development, employment and protection of military weapons systems and resources for the Air force and Army.

34. <u>Headquarters 7th Weather Wing.</u>

Headquarters 7th Weather Wing directs the operations of 3 weather squadrons and 23 detachments in providing or arranging staff and operational meteorological aerospace environmental support to various agencies including Military Airlift Command.

35. <u>Detachment 9, 7th Weather Wing.</u>

Det 9, 7th Weather Wing provides environmental support and resource protection to the 375th Aeromedical Airlift Wing, the 375th Air Base Group, and all tenant organizations on Scott AFB.

APPENDIX D.1

DISCUSSION OF ST. LOUIS AFS

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DISCUSSION OF ST. LOUIS AFS

SUMMARY

St. Louis Air Force Station (AFS) consists of three parcels of land 65.1 acres total) located in St. Louis City and County of Missouri. The installation at 3200 South Second Street was established in 1827. Until 1952, this installation was used primarily as a supply depot. Since 1952, the installation has served as the main production facility of the Defense Mapping Agency Aerospace Center (previously designated Aeronautical Chart and Information Center). The second of three parcels, the St. Louis Storage Annex, was used as a medical supply storage facility by the U.S. Army from 1951 until 1963 and by the Defense Mapping Agency as a production and storage facility from 1956 to the present. The last parcel, the Jefferson Barracks housing site, consists of three duplex units that are used for military housing. Although these three properties are allocated to the Defense Mapping Agency, the properties are owned by Scott AFB. The Defense Mapping Agency is responsible for the maintenance of existing facilities and for construction of new facilities.

The mission of the Defense Mapping Agency Aerospace Center is to provide aerospace mapping, charting and geodetic products to the U.S. Armed Forces and Federal Agencies.

Past hazardous waste management practices were reviewed through a search of installation records, interviews with nineteen station personnel and site inspections. The purpose of this review is to evaluate the potential hazards to health, welfare and the environment due to environmental contamination resulting from past hazardous waste handling, storage and disposal at the installations. No sites of potential environmental contamination or hazards resulting from contamination were identified at St. Louis AFS, therefore, follow-on actions are not recommended. Since no sites were identified, the environmental setting of the three installations is not discussed.

INSTALLATION DESCRIPTION

Location Size & Boundaries

The St. Louis Air Force Station (AFS) consists of three parcels of land located in St. Louis City and County of Missouri (Figure 2.2). The main installation consists of 24.6 acres of land at 3200 South Second Street in the City of St. Louis. It is located in an industrial area approximately 2.5 miles south of downtown St. Louis, near the western bank of the Mississippi River. The St. Louis Storage Annex is located at 8900 South Broadway approximately 5 miles south of the main facility. The boundary line of the City of St. Louis runs through the facility, thus placing approximately one third of the installation's 39 acres within the city and the remainder in an unincorporated area known as Lemay. The Jefferson Barracks housing site is located approximately three miles south of the storage annex in a portion of what was a large military reservation whose history predates the Civil War. The housing site consists of three duplex units on 1.5 acres of land.

Station History

The main installation at 3200 South Second Street was established in 1827. From this date until about 1886, the installation was used as an ordnance and recruiting depot for the cavalry. From 1886 to 1927, the facility was used as a clothing and general supply depot. In 1927 the installation was designated the St. Louis Medical Depot. For the next 25 years, the installation was used as a medical supply depot. In 1952, the property was transferred to the U.S. Air Force for the purpose of establishing the main production facility of the Aeronautical Chart and Information Center (ACIC) under the Military Airlift Command (previously designated Military Air Transport Service). In 1960, the ACIC was reorganized to operate as a separate operating agency with the procedural responsibilities of a major command to function directly under Headquarters USAF. In 1972, the ACIC became one of the three centers under a new Department of Defense (DOD) agency called the Defense Mapping Agency (DMA). Mapping, charting and geodetic functions that were previously performed by separate organizations within the three military departments were consolidated within DMA. The St. Louis center was designated the Defense Mapping Agency Aerospace Center (DMAAC).

Government use of the St. Louis Storage Annex began in 1945. The War Assets Administration used the site as a sales facility until 1951 when the property was transferred from the General Services Administration (GSA) to the U.S. Army. The site was then used by the St. Louis Medical Depot as a storage facility and training school. In 1956, the Department of the Army transferred jurisdiction of the Annex to the Department of the Air Force for use by the ACIC, however, the Army continued to use a portion of the facility until 1963 under permit from the Air Force. South Annex property was under ACIC jurisdiction until 1972. Since that date, the Annex has been used by DMAAC for production, storage, training, administration, and maintenance shops.

The Jefferson Barracks site is the location of three duplex housing units used for family housing by military personnel stationed at DMAAC. The land these housing units are on was part of a 1,260 acre tract procured in 1826 for the purpose of establishing a permanent fort near the City of St. Louis. Between 1840 and 1860, Jefferson Barracks was used principally as an encampment for military personnel. After the Civil War, the facility was turned over to the Ordnance Department. In 1883, Jefferson Barracks was transferred to the Quartermaster Department. The installation was used as a training center by the U.S. Army Air Corps from 1941 to 1946. Following Would War II, portions of the installation were assigned to various components of the Missouri Army National Guard and the Missouri Air National Guard. In 1961, the three buildings on 1.5 acres of land were transferred to the U.S. Air Force. Headquarters ACIC became tenants of the housing units until 1972 when the ACIC was absorbed by the Defense Mapping Agency.

The three properties discussed above were allocated to the Defense Mapping Agency in 1972. However, since DOD agencies do not own real property, the Military Airlift Command became the host command for DMA facilities in the St. Louis area for real estate accounting purposes. The Defense Mapping Agency Aerospace Center retained Facilities Engineering responsibility for the maintenance of records and processing required real estate reports to Scott Air Force Base.

Organization and Mission

The mission of the Defense Mapping Agency Aerospace Center (DMAAC) is to provide aerospace mapping, charting and geodetic products, and data services to the Armed Forces of the United States and to Department of Defense and other Federal Agencies. The organization produces, distributes and maintains aeronautical, extraterrestrial and astronautical charts, air target materials, digital data and special products in support of various weapons systems and simulator trainers. The major tenant organizations at St. Louis AFS are listed below.

- o Defense Fuel Region - Central
- o Defense Investigative Service
- o Civil Air Patrol (Missouri Wing)
- o U.S. Army Corps of Engineers
- o Detachment 1, 1974th Communications Group
- o National Federation of Federal Employees - Local 1827
- o Arsenal Credit Union

FINDINGS

This section summarizes the hazardous wastes generated by installation activities, identifies hazardous waste storage and disposal sites located on the installation, and evaluates the potential for environmental contamination from hazardous waste sites. Past waste generation and disposal methods were reviewed to assess hazardous waste management practices at St. Louis AFS.

Station Hazardous Waste Activity Review

A review was made of past and present installation activities that resulted in generation, accumulation and disposal of hazardous wastes. Information was obtained from files and records, interviews with installation employees and site inspections.

The sources of hazardous waste at St. Louis AFS are grouped into the following categories:

- o Industrial Operations (Shops)
- o Hazardous Waste Storage Areas
- o Fuels Management
- o Pesticide Utilization

It is noted that file data and interviews did not enable determination of waste handling activities prior to the early 1950's. From the historical descriptions of major activities (storage of medical supplies) at the station, it is believed that the generation of hazardous materials was small. There is no information concerning PCB transformers or capacitors at the station, nor any information on spills or leaks of PCB's at the station.

The subsequent discussion addresses only those wastes generated at St. Louis AFS which are either hazardous or potentially hazardous. Potentially hazardous wastes are grouped with and referenced as "hazardous wastes" throughout this report. A hazardous waste, for this report, is defined by, but not limited to, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). For study purposes, waste petroleum products such as contaminated fuels, waste oils and spent solvents are included in the "hazardous waste" category.

Industrial Operations (Shops)

Summaries of industrial operations at St. Louis AFS were developed from installation files and interviews. Information obtained was used to determine which shops handle hazardous materials and which ones generate hazardous wastes. Summary information on all installation shops is provided in Appendix E, Master List of Shops.

For the shops identified as generating hazardous wastes, file data were reviewed and personnel were interviewed to determine the types and quantities of materials and present and past disposal methods. Information developed from station files and interviews with installation employees is summarized in Table D.1. This table presents shop location waste material, current waste quantity and disposal methods. As indicated previously, information concerning shops that operated at the station prior to the early 1950's was minimal. Waste disposal practices presented in Table D.4 (see Appendix D.2) are those which were used since the early 1950's unless otherwise indicated.

The shops that generate the largest quantities of hazardous waste are photographic processing shops within the Scientific Data Department and Graphic Arts Department. Silver is recovered from the wastes prior to discharge to the St. Louis Metropolitan Sanitation District sewer system. It should be noted that the wastes that are discharged to the

TABLE D.1
Industrial Operations (Shops) Waste Management

Shop Name	Location (Bldg. No.)	Waste Material	Current Waste Quantity	Methods of Treatment, Storage & Disposal
<u>Scientific Data Department</u>				
Precision Photographic Division	36	Black & White Developers and Fixers	41,600 gals/yr	Silver Recovery/Sanitary Sewer
		Color Developers and Fixers	31,400 gals/yr	Silver Recovery/Sanitary Sewer
		Perchloroethylene	25 gals/yr	Accumulation for Off-Site Disposal(1)
<u>Graphic Arts Department</u>				
Photo/Plate Division	89002	Black & White Developers and Fixers	6,300 gals/yr	Silver Recovery/Sanitary Sewer
		Color Developers and Fixers	600 gals/yr	Silver Recovery/Sanitary Sewer
Printing/Finishing Division	89002	Press Room Fountain Etch (15% Isoprophyl Alcohol)	260 gals/yr	Sanitary Sewer
		Perchloroethylene & Naptha Solvent	75-100 gals/yr	DPDO
<u>Directorate of Facilities Engineering</u>				
Air Conditioning Section	36	Refrigeration Oil	150 gals/yr	DPDO(2)
		Air Compressor Oil	180 gals/yr	DPDO(2)
<u>Directorate of Logistics</u>				
Vehicle Operations & Maintenance Branch	89001	Motor Oil & Transmission Fluid	660 gals/yr	DPDO
		Battery Acid	12 gals/yr	Sanitary Sewer

DPDO - Defense Property Disposal Office

(1) Waste accumulated during 1984. Quantity generated prior to 1984 was less than 5 gallons per year which was discharged to the sanitary sewer.

(2) Waste oils generated prior to 1975 were dumped on the ground east of Building 36 (Second Street Facility).

sewer are highly diluted due to the relatively large volumes of rinse water that are used in these shops. The analytical results of samples of wastewater from sanitary sewers at the Second Street and South Broadway installations were within acceptable limits.

Perchloroethylene is used in shops in the Scientific Data Department and Graphics Art Department. For the past year (1984) spent perchloroethylene has been accumulated in Building 36 until disposal can be arranged thorugh DPDO at Scott AFB. Prior to 1984 the quantity of perchloroethylene generated in this shop was less than 5 gallons per year, which was discharged to the sanitary sewer system. A larger quantity of waste perchloroethylene is generated at the South Broadway facility in the Printing/Finishing Division. This waste is stored in the Hazardous Waste Storage Area, Facility 89005 prior to disposal though DPDO.

Waste oil is generated in the Vehicle Maintenance and Air Conditioning shops. Prior to 1975, the waste oil generated in the Air Conditioning shop was disposed on the ground east of Building No. 36 at the Second Street installation. Since 1975, the oil has been stored in the Hazardous Waste Storage Area, Facility 89005 for disposal through DPDO. According to shop personnel, the waste oil from the Vehicle Maintenance shop has been removed from the base since at least the late 1950's, except for a short period during the 1960's when the oil was used as a weed killer by Pavements, Grounds and Entomology shop personnel.

Hazardous Waste Storage Areas

There are two hazardous waste storage areas at St. Louis AFS. As discussed above, asbestos is stored in the Pipefitting Shop prior to off-site contract disposal. The other storage area is Facility 89005 at the South Broadway installation. This area is a concrete slab enclosed by a fence adjacent to Building 89001. The area is used for storage of waste oil, spent perchloroethylene and other wastes, prior to shipment to Scott AFB for disposal through DPDO. According to station personnel, no major spills have occurred in this area.

Fuels Management

Liquid fuels storage facilities include aboveground and underground tanks for diesel fuel for generators and boilers and underground gasoline tanks for lawnmowers and other small power equipment. The major liquid fuel storage tanks are listed in Table D.2 (see Appendix D.2). Underground tanks are gauged monthly to check for leaks. All fuel tanks are inspected annually for corrosion and sludge accumulation. The tanks are cleaned approximately every 4 to 5 years by a contractor. Sludges that have been removed from the tanks have been removed from the station by contractors since at least 1974. According to station personnel, there have been no major tank leaks or fuel spills at the installations.

Pesticide Utilization

Various pesticides have been used at St. Louis AFS by Pavements, Grounds and Entomology shop personnel for control of insects and weeds. The insecticides and herbicides currently used at the station are listed in Table D.3 (see Appendix D.2). Pesticides are stored in Building No. 2 at the 3200 Second Street installation and in Building No. 1 at the 8900 South Broadway installation. Pesticides are mixed in an area adjacent to Building No. 2 and applied using 110-gallon and 1-gallon sprayers. Empty containers are rinsed, punctured, crushed, and placed in a dumpster. Rinsewaters from the pesticide containers and sprayers are applied in the area where the pesticides were used. According to station personnel no major spills have occurred in the storage or mixing areas.

Station Waste Treatment and Disposal Methods

This subsection discusses past and present methods that have been used for disposal of waste at St. Louis AFS. Since the three installations consist of relatively small parcels of land in an urban setting, wastes have not been buried in landfills on the installations. Garbage, rubbish and other wastes have been routinely removed from the station by contract haulers. Methods of on-site waste disposal at the station include incineration of photographs, disposal of waste oil on the ground at the Second Street installation, and suspected disposal of medical supplies in surface water at the South Broadway installation. These three on-site disposal methods are discussed below.

An incinerator is used for destruction of obsolete classified and unclassified photographs. The ash from the incinerator is removed from the station and sent to a silver reclamation facility.

Waste oil from the Air Conditioning shop was poured onto the ground east of Building No. 36 at the Second Street installation until the mid-1970's. During a construction project involving the installation of cooling towers east of Building No. 36, an excavation was made in the area where contaminated soils may have been present. The soils from depths shallower than approximately 10-feet were removed from the station. Since potentially contaminated soils were removed from the area, the site is judged to have minimal potential for hazards to health, welfare or the environment resulting from contamination.

As previously discussed, the U.S. Army formerly used the South Broadway installation as a medical supply storage facility. It is suspected that when the Army left the station in the early 1960's, medical supplies may have been disposed of into two ponds that are located on station property. The ponds are currently used for fishing. Surface water and sediment samples were collected in 1978 to evaluate the potential for hazards to consumers of fish from the ponds. The results of the analysis of the samples indicate that there are elevated levels of cadmium, lead, and zinc in the sediments; the elevated levels were attributed to urban runoff in an Air Force report (Piercy, 1978).

Based on the results of the analysis of six surface water samples for cadmium, chromium, lead, titanium and zinc, the author of the report concluded that there was no evidence to substantiate a detrimental health impact due to heavy metals on aquatic life in the ponds or from the consumption of fish from the ponds. The author of the Air Force Report recommended that no restriction be placed on fishing in the pond, and that a program of monitoring pH in the ponds and regular sampling of the ponds be implemented. There is no information that indicates that a potential for hazards to health, welfare or environment exists due to the past disposal of wastes in the ponds.

CONCLUSIONS

Information obtained from installation files and interviews with station personnel indicates that most of the hazardous wastes generated at St. Louis AFS consist of photographic processing wastes which are discharged after silver recovery in a highly diluted form to the St. Louis Metropolitan Sanitation District sewer system. Other wastes including waste oils and solvents are currently removed from the station for disposal through DPDO. Station personnel have indicated that no major spills of hazardous wastes, liquid fuels or pesticides have occurred at the installations.

In the past, waste oil was disposed on the ground at the 3200 South Second Street facility; however, contaminated soils were removed from the station during a construction project. It is suspected that in the early 1960's medical supplies were disposed of in the two ponds at the 8900 South Broadway facility; however, there is no information to indicate that hazards to health, welfare or the environment exist as a result of the disposal of wastes (if any occurred) in these ponds.

Based on the results of these findings, it is concluded that there is minimal potential for contamination because of past hazardous waste handling and disposal practices, therefore, no Phase II follow-on actions are recommended at St. Louis AFS.

APPENDIX D.2

SUPPLEMENTAL BASE FINDINGS INFORMATION

TABLE D.2
LIST OF PESTICIDES

CE Entomology - Scott AFB	Golf Course Maint. - Scott AFB
Vapora	Banuel 4-5
Filam	Plyac
Dursban	Simazine 80W
Metasystox	Malathon
Systox	Koban 30
Oftanol	Tobay
Baygon	Trex-San Benot
Cygon	Presan
Kelthane	Ded Weed
Diazinon	Round up
Boric Acid	Thiram 42-5
Chlordane	Bayleton Fungicide
Malathion	Paraquat
Sevin	Contax
Phenothrin	Diazinon
Pyrethrin	Daconil
Warfarin	Amine 4-D
Cythion	Dacthal
Thuricide	Tersan 1991
Plyac	Thylate
Dipel	Krenite
Rodenticides	Banol
	Foram
Grounds and Pavement - Scott AFB	Kromad
	Oftanol
Methar 30	Ronstar
Oftanol	Sevin
Bayleton Fungicide	Sequestrine
Diazinon	Simazine
Daconil	Surflan
Silvex	Disodium Methan Arsonate
Paraquat	
Contax Weed Killer	
Krenite	**St. Louis AFS-Defense Mapping Agency**
Tersan LSR	Taylon
Thylate	Pyrethian
Tersan 1991	Termide
Kromad Fungicide	Dursban
Koban 30	Manosect
Kobaz Fungicide	Aeromaster
2-4-D Amine	Diazinon
Steritron Weed Killer	Wasp Freeze
	Selective Weed No. 33
	Weed Out No. 9
	100 Amine
	Giddy-Up Fertilizer/ Weed Control

Source: Installation Documents

TABLE D.3
LIST OF STORAGE AND OPERATING TANKS

Bldg.	Facility	Material Stored	Total Storage Capacity	Type Storage U=Underground A=Aboveground	Age of Major Tanks (Years)
Scott AFB					
1401-1410	Officer Family Hsg (10 tanks)	#2 Fuel Oil	2,000 gal each	U	
1530	Medical Ctr.	Diesel Fuel	1,000 gal	U	
1530	Medical Ctr.	LPG	1,000 gal	A	
1533	Med. Ctr. Annex	#2 Fuel Oil	1,000 gal	A	
1600	HQ MAC	Diesel Fuel	8,000 gal	U	
1965	BX Svc. Stn. (3 tanks)	MOGAS	30,000 gal each	U	10, 23, 23
1970	Security Police	#2 Fuel Oil	1,000 gal	A	
1961	Commissary	#2 Fuel Oil	4,000 gal	U	
50	Data Processing	Diesel Fuel	4,000 gal	U	
530	CE	#2 Fuel Oil	1,000 gal	A	
530	CE	#2 Fuel Oil	1,000 gal	A	
531	CE	#2 Fuel Oil	1,000 gal	A	
528	CE	#2 Fuel Oil	1,000 gal	A	
532	CE	#2 Fuel Oil	1,500 gal	A	
535	CE	#2 Fuel Oil	275 gal	A	
538	CE	#2 Fuel Oil	1,000 gal	A	
543	CE	#2 Fuel Oil	1,000 gal	A	
515	CE	#2 Fuel Oil	1,000 gal	A	
514	CE	#2 Fuel Oil	1,000 gal	A	
516	CE	#2 Fuel Oil	1,000 gal	A	
517	CE	#2 Fuel Oil	1,000 gal	A	
509	BX	#2 Fuel Oil	1,000 gal	A	
8550	Base Fuels Storage	JP-4	210,000 gal	A	28
8570	Base Fuels Storage	JP-4	210,000 gal	A	30
508	Tanks 20, 21, & 22	JP-4	110,000 gal	U	
506	Flt. Line Hangar	#2 Fuel Oil	5,000 gal	U	
505	Admin. Bldg.	#2 Fuel Oil	1,500 gal	A	

TABLE D.3
LIST OF STORAGE AND OPERATING TANKS
(Continued)

Bldg.	Facility	Material Stored	Total Storage Capacity	Type Storage U=Underground A=Aboveground	Age of Major Tanks (Years)
58	Inactive Fuel Tank Farm (Tank 4, 7)	Empty	25,000 gal each	U	
58	Fuel Tank Farm (Tank 1, 2, 3, 4, 5, 6)	#2 Fuel Oil	25,000 gal each	U	36 - 39
58	Fuel Tank Farm (Tank 13, 14, 15, 16)	Waste Oil	10,000 gal each	U	36 - 39
503	CAMS Bldg.	#2 Fuel Oil	1,000 gal	U	
48	MOGAS Station (3 tanks)	MOGAS	11,000 gal each	U	7, 32, 32
45	Base Htg Plt	LPG	1,000 gal	A	10
45	Tank 8455	#6 Fuel Oil	420,000 gal	A	10
45	Tank 49	#6 Fuel Oil (Waste)	1,000 gal	U	10
433	Main Hangar	Diesel Fuel	2,000 gal	U	
6720	RAPCON GCA	Diesel Fuel	2,000 gal	U	
456	AGE Sve Stn	Gasoline	1,000 gal	U	11
456	AGE Sve Stn	Jet Fuel JP-4	500 gal	U	11
456	AGE Maint	#2 Fuel Oil	5,000 gal	U	11
457	C9 Maint	#2 Fuel Oil	5,000 gal	U	
-	Mobile Tank Farm	JP-4	50,000 gal	A	
1192	Golf Crs Clbhse	LPG	1,000 gal	U	
5484	Radar Twr	Diesel Fuel	1,000 gal	U	
1197	Golf Crs Maint	#2 Fuel Oil	1,000 gal	A	
3650	932d AAGp	#2 Fuel Oil	5,000 gal	U	
3670	Htg Plt	#2 Fuel Oil	1,000 gal	A	
3670	Htg Plt	#6 Fuel Oil	20,000 gal	U	9
8552	Fuel Strg Tanks	JP-4	27,000 gal	A	28
8554	Fuel Strg Tanks	JP-4	27,000 gal	A	28
3184	Fuel Tanker Maint	#2 Fuel Oil	1,000 gal	A	

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TABLE D.3
LIST OF STORAGE AND OPERATING TANKS
(Continued)

Bldg.	Facility	Material Stored	Total Storage Capacity	Type Storage U=Underground A=Aboveground	Age of Major Tanks (Years)
3191	Htg Plt	#2 Fuel Oil	1,000 gal	A	
3191	Htg Plt	#6 Fuel Oil	30,000 gal	U	9
3200	Aero Club	Gasoline	5,000 gal	U	
3200	CE Maint	#2 Fuel Oil	5,000 gal	U	
3271	Storage	#2 Fuel Oil	1,000 gal	A	
3273	Storage	#2 Fuel Oil	1,000 gal	A	
3270	Storage	#2 Fuel Oil	1,500 gal	A	
3272	Storage	#2 Fuel Oil	1,500 gal	A	
3275	Storage	#2 Fuel Oil	1,500 gal	A	
3277	Storage	#2 Fuel Oil	1,000 gal	A	
3279	Storage	#2 Fuel Oil	1,000 gal	A	
3274	Storage	#2 Fuel Oil	2,000 gal	A	
4157	DPDO	#2 Fuel Oil	1,000 gal	A	
4141	DPDO	#2 Fuel Oil	1,000 gal	A	
853	Storage	#2 Fuel Oil	1,500 gal	A	
854	Storage	#2 Fuel Oil	1,500 gal	A	
877	Inactive	Empty, Prev. #2 Fuel Oil	1,500 gal	A	
878	Storage	#2 Fuel Oil	1,500 gal	A	
855	Storage	#2 Fuel Oil	1,000 gal	A	
879	Storage	#2 Fuel Oil	1,500 gal	A	
869	Htg Plt	#2 Fuel Oil	1,000 gal	A	
869	Htg Plant	#2 Fuel Oil	1,000 gal	A	
869	Htg Plt	#6 Fuel Oil	20,000 gal	U	9
741	Publications	#2 Fuel Oil	1,000 gal	A	
-	Auto Hobby	Waste Motor Oil	550 gal	U	12

TABLE D.3
LIST OF STORAGE AND OPERATING TANKS
(Continued)

Bldg.	Facility	Material Stored	Total Storage Capacity	Type Storage U=Underground A=Aboveground	Age of Major Tanks (Years)
St. Louis AFS - Second Street Facility					
-	Parade Field (4 tanks)	#6 Fuel Oil	30,000 gal each	U	-
-	Parade Field (2 tanks)	Sanded in place, prev. held #6 Fuel Oil	2,000 gal each	U	-
18	-	#2 Fuel Oil	2,000 gal	U	-
37	-	#2 Fuel Oil	2,000 gal	U	-
1	-	#2 Fuel Oil	775 gal	A	-
1	-	#2 Fuel Oil	775 gal	U	-
12	-	#2 Fuel Oil	2,000 gal	A	-
36	-	#1 Fuel Oil	1,000 gal	U	-
18	-	Gasoline	Unknown	U	-
St. Louis AFS - Broadway Facility					
1	Eastside (2 tanks)	#5 Fuel Oil	50,000 gal each	A	-

Source: Installation Documents

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1984/NPDES Compliance Monitoring Reports

POLLUTION MONITORING PROGRAM - Year: 1994 Table D-4 Site: #1

SAMPLING SITE IDENTIFIER: 0174-NA-001 SITE DESCRIPTION: Ash Creek Entering Scott AFB
STANDARDS: Illinois Pollution Control Board Rules & Regulations, Chap 3, Part II, Para 203, 1 Aug 1980.

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Ammonia	00610	1.5	mg/L	0.3		< 0.2	< 0.2
Arsenic	01002	1000	ug/L	< 10		< 10	< 10
Barium	01007	5000	ug/L	< 200		< 200	< 200
Boron	01002	1000	ug/L	< 500		< 500	< 500
Cadmium	01027	50	ug/L	< 10		< 10	< 10
Chemical Oxygen Demand	00340	-	mg/L	—	—	—	11.0
Chloride	00940	500	mg/L	120		24	36
Chromium (III)	01033	1000	ug/L	< 50		< 50	< 50
Chromium (VI)	01032	50	ug/L	< 50		< 50	< 50
Copper	01042	20	ug/L	< 20		< 20	< 20
Cyanide	00720	0.025	mg/L	< 0.01		< 0.01	< 0.01
Dissolved Oxygen	00300	> 6.0	mg/L	10.0	13.0	8.0	10.0
Fluoride	00951	1.4	mg/L	0.2		0.2	0.3
Gross Beta	03501	100	pCi/L	—	—	—	
Iron	01045	1000	ug/L	< 100		< 100	327
Lead	01051	100	ug/L	< 10		< 20	< 20
Manganese	01055	1000	ug/L	327		< 50	206
Mercury	71900	0.5	ug/L	< 1		< 1	< 1

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Table D-4 (Continued)

Year: 1984 Site: #1

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Nickel	01067	1000	ug/L	<50		< 50	<50
Oil & Grease	00560	-	mg/L	0.3		< 0.3	<0.3
pH (Hydrogen Ion)	00400	6.5-9.0	Units	7.52	8.32	8.22	8.31
Phenols	32730	100	ug/L	50		< 10	< 10
Phosphorus	00665	0.05	mg/L	0.16		0.16	0.2
Radium - 226	09501	1	pCi/L	—	—	—	
Selenium	01147	1000	ug/L	<10		< 10	<10
Silver	01077	5.0	ug/L	<10		< 10	<10
Strontium - 90	13501	2	pCi/L	—	—	—	
Sulfates	00945	500	mg/L	78		82	71
Surfactants	38260	-	mg/L	—	—	—	< 0.1
Temperature	00010	Note 1	°C	8	10	24	14
Total Dissolved Solids	70300	1000	mg/L	583		507	426
Zinc	01092	1000	ug/L	<50		< 50	<50

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1984/NPDES Compliance Monitoring Reports

POLLUTION MONITORING PROGRAM - Year: 1984 Table D-4 (Continued) Site: #2

SAMPLING SITE IDENTIFIER: 0174 - NA - 002 SITE DESCRIPTION: Ash Creek Leaving South AFB
STANDARDS: Illinois Pollution Control Board Rules & Regulations, Chap 3, Part II, Para 203, 1 Aug 1980.

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Ammonia	00610	1.5	mg/L	0.2		< 0.2	< 0.2
Arsenic	01002	1000	ug/L	< 10		< 10	< 10
Barium	01007	5000	ug/L	< 200		< 200	< 200
Boron	01002	1000	ug/L	< 500		< 500	< 500
Cadmium	01027	50	ug/L	< 10		< 10	< 10
Chemical Oxygen Demand	00340	-	mg/L	—	—	—	19.0
Chloride	00940	500	mg/L	44		56	44
Chromium (III)	01033	1000	ug/L	< 50		< 50	< 50
Chromium (VI)	01032	50	ug/L	< 50		< 50	< 50
Copper	01042	20	ug/L	39		24	26
Cyanide	00720	0.025	mg/L	< 0.01		< 0.01	< 0.01
Dissolved Oxygen	00300	> 6.0	mg/L	14.0	9.0	9.0	8.0
Fluoride	00951	1.4	mg/L	0.4		0.7	0.5
Gross Beta	03501	100	pCi/L	—	—	—	
Iron	01045	1000	ug/L	< 100		< 100	129
Lead	01051	100	ug/L	< 20		< 20	< 20
Manganese	01055	1000	ug/L	35		< 40	83
Mercury	71900	0.5	ug/L	< 1		< 1	< 1

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Year: 1984

Table D-4 (Continued)

Site: #2

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Nickel	01067	1000	ug/L	<50		< 50	<50
Oil & Grease	00560	-	mg/L	<0.3		< 0.3	<0.3
pH (Hydrogen Ion)	00400	6.5-9.0	Units	8.60	7.97	8.38	8.07
Phenols	32730	100	ug/L	82		< 10	<10
Phosphorus	00665	0.05	mg/L	0.13		0.69	0.7
Radium - 226	09501	1	pCi/L	—	—	—	
Selenium	01147	1000	ug/L	<10		< 10	<10
Silver	01077	5.0	ug/L	<10		< 10	<10
Strontium - 90	13501	2	pCi/L	—	—	—	
Sulfates	00945	500	mg/L	79		62	87
Surfactants	38260	-	mg/L	—	—	—	<0.1
Temperature	00010	Note 1	°C	8	14	23	18
Total Dissolved Solids	70300	1000	mg/L	435		426	395
Zinc	01092	1000	ug/L	<50		< 50	<50

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1984/NPDES Compliance Monitoring Reports

POLLUTION MONITORING PROGRAM - Year: 1984 Table D-4 (Continued) Site: # 3

SAMPLING SITE IDENTIFIER: 0174-NA-003 SITE DESCRIPTION: Hangar Road Storm Drainage
STANDARDS: Illinois Pollution Control Board Rules & Regulations, Chap 3, Part II, Para 203, 1 Aug 1980.

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Ammonia	00610	1.5	mg/L	9.7		0.2	< 0.2
Arsenic	01002	1000	ug/L	< 10		< 10	< 10
Barium	01007	5000	ug/L	< 200		< 200	< 200
Boron	01002	1000	ug/L	< 500		< 500	< 500
Cadmium	01027	50	ug/L	< 10		< 10	< 10
Chemical Oxygen Demand	00340	-	mg/L	—	—	—	10.0
Chloride	00940	500	mg/L	240		12	36
Chromium (III)	01033	1000	ug/L	< 50		< 50	< 50
Chromium (VI)	01032	50	ug/L	< 50		< 50	< 50
Copper	01042	20	ug/L	20		< 20	23
Cyanide	00720	0.025	mg/L	< 0.01		< 0.01	< 0.01
Dissolved Oxygen	00300	> 6.0	mg/L	8.0	7.0	9.0	9.0
Fluoride	00951	1.4	mg/L	0.2		0.6	0.5
Gross Beta	03501	100	pCi/L	—	—	—	
Iron	01045	1000	ug/L	< 100		< 100	< 100
Lead	01051	100	ug/L	< 20		< 20	< 20
Manganese	01055	1000	ug/L	< 50		61	133
Mercury	71900	0.5	ug/L	< 1		< 1	< 1

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Year: 1984

Table D-4 (Continued)

Site: #3

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Nickel	01067	1000	ug/L	<50		< 50	<50
Oil & Grease	00560	-	mg/L	0.5		<0.3	0.3
pH (Hydrogen Ion)	00400	6.5-9.0	Units	7.27	8.26	7.56	8.11
Phenols	32730	100	ug/L	224		<10	<10
Phosphorus	00665	0.05	mg/L	0.15		0.23	0.4
Radium - 226	09501	1	pCi/L	—	—	—	
Selenium	01147	1000	ug/L	<10		< 10	<10
Silver	01077	5.0	ug/L	<10		< 10	<10
Strontium - 90	13501	2	pCi/L	—	—	—	
Sulfates	00945	500	mg/L	95		115	81
Surfactants	38260	-	mg/L	—	—	—	0.1
Temperature	00010	Note 1	°C	9	10	25	20
Total Dissolved Solids	70300	1000	mg/L	761		635	390
Zinc	01092	1000	ug/L	<50		<50	<50

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1984/NPDES Compliance Monitoring Reports

POLLUTION MONITORING PROGRAM - Year: 1984 Table D-4 (Continued) Site: # 4

SAMPLING SITE IDENTIFIER: 0174-NA-004 SITE DESCRIPTION: South Ditch Storm Drainage
STANDARDS: Illinois Pollution Control Board Rules & Regulations, Chap 3, Part II, Para 203, 1 Aug 1980.

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Ammonia	00610	1.5	mg/L	0.5		< 0.2	< 0.2
Arsenic	01002	1000	ug/L	< 10		< 10	< 10
Barium	01007	5000	ug/L	< 200		< 200	< 200
Boron	01002	1000	ug/L	—	—	—	< 500
Cadmium	01027	50	ug/L	< 10		< 10	< 10
Chemical Oxygen Demand	00340	-	mg/L	—	—	—	11.0
Chloride	00940	500	mg/L	44		80	32
Chromium (III)	01033	1000	ug/L	< 50		< 50	< 50
Chromium (VI)	01032	50	ug/L	< 50		< 50	< 50
Copper	01042	20	ug/L	< 20		< 20	< 20
Cyanide	00720	0.025	mg/L	< 0.01		< 0.01	< 0.01
Dissolved Oxygen	00300	> 6.0	mg/L	17.0	10.0	10.0	8.0
Fluoride	00951	1.4	mg/L	0.4		0.7	0.4
Gross Beta	03501	100	pCi/L	—	—	—	
Iron	01045	1000	ug/L	< 100		< 100	< 100
Lead	01051	100	ug/L	< 20		< 20	< 20
Manganese	01055	1000	ug/L	125		< 50	67
Mercury	71900	0.5	ug/L	< 1		< 1	< 1

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Table D-4 (Continued)

Year: 1984 Site: #4

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Nickel	01067	1000	ug/L	<50		<50	<50
Oil & Grease	00560	-	mg/L	0.3		<0.7	0.3
pH (Hydrogen Ion)	00400	6.5-9.0	Units	8.31	8.01	8.95	7.86
Phenols	32730	100	ug/L	114		<10	<10
Phosphorus	00665	0.05	mg/L	<0.1		0.34	0.2
Radium - 226	09501	1	pCi/L	—	—	—	
Selenium	01147	1000	ug/L	<10		<10	<10
Silver	01077	5.0	ug/L	<10		<10	<10
Strontium - 90	13501	2	pCi/L	—	—	—	
Sulfates	00945	500	mg/L	235		71	90
Surfactants	38260	-	mg/L	—	—	—	0.1
Temperature	00010	Note 1	°C	4	10	28	15
Total Dissolved Solids	70300	1000	mg/L	628		486	497
Zinc	01092	1000	ug/L	100		<50	<50

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1984/NPDES Compliance Monitoring Reports

POLLUTION MONITORING PROGRAM - Year: 1984 Table D-4 (Continued) Site: #5

SAMPLING SITE IDENTIFIER: 0174-NS-005 SITE DESCRIPTION: Sewage Treatment Plant Effluent
STANDARDS: Illinois Pollution Control Board Rules & Regulations, Chap 3, Part IV, Para 408, 1 Aug 1980.

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Ammonia	00610	4.0	mg/L	2.3		0.3	0.6
Arsenic	01002	250	ug/L	< 10		< 10	< 10
Barium	01007	2000	ug/L	< 200		< 200	< 200
Cadmium	01027	150	ug/L	< 10		< 10	< 10
Chemical Oxygen Demand	00340	-	mg/L	—	—	—	20
Chromium (III)	01033	1000	ug/L	< 50		< 50	< 50
Chromium (VI)	01032	300	ug/L	< 50		< 50	< 50
Copper	01042	1000	ug/L	24		< 20	23
Cyanide	00720	0.1	mg/L	< 0.01		< 0.01	< 0.01
Fluoride	00951	15.0	mg/L	0.4		0.6	44.0
Iron (Total)	01045	2000	ug/L	< 100		< 100	< 100
Iron (Dissolved)	01046	500	ug/L	—	—	—	< 100
Lead	01051	100	ug/L	< 20		< 20	< 20
Manganese	01055	1000	ug/L	< 50		< 50	< 50
Mercury	71900	0.5	ug/L	< 1		< 1	< 1
Nickel	01067	1000	ug/L	< 50		< 50	< 50
Oil & Grease	00560	15.0	mg/L	2.6		< 0.3	1.4
pH (Hydrogen Ion)	00400	5.0-10.0	Units	7.71	7.57	8.21	8.2[illegible]

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Year: 1984

Table D-4 (Continued)

Site: #5

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Phenols	32730	300	ug/L	<10		<10	<10
Phosphorus	00665	1.0	mg/L	4.7		8.0	2.1
Selenium	01147	1000	ug/L	<10		<10	<10
Silver	01077	100	ug/L	<10		<10	<10
Surfactants	38260	-	mg/L	—	—	—	0.2
Total Dissolved Solids	70300	750	mg/L	511		440	401
Zinc	01092	1000	ug/L	<50		<50	<50

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GENERAL PURPOSE

1984/NPDES Compliance Monitoring Reports

POLLUTION MONITORING PROGRAM - Year: 1984 Table D-4 (Continued) Site: #6

SAMPLING SITE IDENTIFIER: 0174-NA-006 SITE DESCRIPTION: North Ditch Entering Scott AFB

STANDARDS: Illinois Pollution Control Board Rules & Regulations, Chap 3, Part II, Para 203, 1 Aug 1980.

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Aldrin	39330	1.0	ug/L			< 0.02	
Ammonia	00610	1.5	mg/L	0.8		< 0.2	0.4
Arsenic	01002	1000	ug/L	< 10		< 10	< 10
Barium	01007	5000	ug/L	< 200		< 200	< 200
Boron	01022	1000	ug/L	< 500		< 500	
Cadmium	01027	50	ug/L	< 10		< 10	< 10
Chemical Oxygen Demand	00340	-	mg/L	—	—	—	20
Chlordane	39350	3.0	ug/L			< 0.2	
Chloride	00940	500	mg/L	60		24	24
Chromium (III)	01033	1000	ug/L	< 50		< 50	< 50
Chromium (VI)	01032	50	ug/L	< 50		< 50	< 50
Copper	01042	20	ug/L	< 20		< 20	< 20
Cyanide	00720	0.025	mg/L	< 0.01		< 0.01	< 0.01
DDT	39370	50	ug/L			< 0.02	
Dieldrin	39380	1.0	ug/L			< 0.02	
Dissolved Oxygen	00300	>6.0	mg/L	15.0	10.0	9.0	11.0
Endrin	39390	0.5	ug/L			< 0.02	
Fluoride	00951	1.4	mg/L	0.2		0.3	0.26

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Year: 1984

Table D-4 (Continued)

Site: #6

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Gross ~~Alpha~~ Beta	03501	100	pCi/L	—	—	—	
Heptachlor	39410	0.1	ug/L			< 0.02	
Heptachlor Epoxide	39420	0.1	ug/L			0.031	
Iron	01045	1000	ug/L	513		387	333
Lead	01051	100	ug/L	<20		<20	<20
Lindane	39782	5.0	ug/L			<0.01	
Manganese	01055	1000	ug/L	<50		<50	290
Mercury	71900	0.5	ug/L	<1		<1	<1
Methyoxychlor	39480	100	ug/L			<0.2	
Nickel	01067	1000	ug/L	<50		<50	<50
Oil & Grease	00560	-	mg/L	1.4		<0.3	
pH (Hydrogen Ion)	00400	6.5-9.0	Units	8.03	7.86	8.52	
Phenols	32730	100	ug/L	10		<10	<10
Phosphorus	00665	0.05	mg/L	0.33		0.32	
Radium - 226	09501	1	pCi/L	—	—	—	
Selenium	01147	1000	ug/L	<10		<10	<10
Silver	01077	5.0	ug/L	<10		<10	<10
Strontium - 90	13501	2	pCi/L	—	—	—	

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Year: 1984 Table D-4 (Continued) Site: # 6

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Sulfates	00945	500	mg/L	42		55	67
Surfactants	38260	-	mg/L	—	—	—	0.1
Temperature	00010	Note 1	°C	4	14	25	11
Total Dissolved Solids	70300	1000	mg/L	298		445	361
Toxaphene	39400	5.0	ug/L			< 1.0	
2,4-D	39730	20	ug/L			0.24	
2,4,5-TP/Silvex	39760	10	ug/L			< 0.06	
Zinc	01092	1000	ug/L	< 50		< 50	< 50

1984/NPDES Compliance Monitoring Reports

POLLUTION MONITORING PROGRAM - Year: 1984 Table D-4 (Continued) Site: # 7

SAMPLING SITE IDENTIFIER: 0174-NA-007 SITE DESCRIPTION: Silver Creek Entering Scott AFB

STANDARDS: Illinois Pollution Control Board Rules & Regulations, Chap 3, Part II, Para 203, 1 Aug 1980.

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Ammonia	00610	1.5	mg/L	1.1		< 0.2	0.3
Arsenic	01002	1000	ug/L	< 10		< 10	< 10
Barium	01007	5000	ug/L	< 200		< 200	< 200
Boron	01002	1000	ug/L	< 500		< 500	< 500
Cadmium	01027	50	ug/L	< 10		< 50	< 50
Chemical Oxygen Demand	00340	-	mg/L	—	—	—	25
Chloride	00940	500	mg/L	52		44	8
Chromium (III)	01033	1000	ug/L	< 50		< 50	< 50
Chromium (VI)	01032	50	ug/L	< 50		< 50	< 50
Copper	01042	20	ug/L	< 20		< 20	< 20
Cyanide	00720	0.025	mg/L	< 0.01		< 0.01	< 0.01
Dissolved Oxygen	00300	> 6.0	mg/L	17.0	11.0	9.0	9.0
Fluoride	00951	1.4	mg/L	0.2		0.4	0.24
Gross Beta	03501	100	pCi/L	—	—	—	
Iron	01045	1000	ug/L	699		554	1980
Lead	01051	100	ug/L	< 20		< 20	< 20
Manganese	01055	1000	ug/L	194		634	346
Mercury	71900	0.5	ug/L	< 1		< 1	< 1

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Year: 1984

Table D-4 (Continued)

Site: #7

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Nickel	01067	1000	ug/L	<50		<50	<50
Oil & Grease	00560	-	mg/L	0.6		0.7	4.7
pH (Hydrogen Ion)	00400	6.5-9.0	Units	7.91	7.95	8.37	8.12
Phenols	32730	100	ug/L	16		<10	<10
Phosphorus	00665	0.05	mg/L	0.28		0.35	0.6
Radium - 226	09501	1	pCi/L	—	—	—	
Selenium	01147	1000	ug/L	<10		<10	<10
Silver	01077	5.0	ug/L	<10		<10	<10
Strontium - 90	13501	2	pCi/L	—	—	—	
Sulfates	00945	500	mg/L	35		76	26
Surfactants	38260	-	mg/L	—	—	—	<0.1
Temperature	00010	Note 1	°C	5	14	28	12
Total Dissolved Solids	70300	1000	mg/L	259		435	153
Zinc	01092	1000	ug/L	<50		<50	<50

1984/NPDES Compliance Monitoring Reports

Year: 1984

Table D-4 (Continued)

Site: #8

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Sulfates	00945	500	mg/L	50		73	56
Surfactants	38260	-	mg/L	—	—	—	< 0.1
Temperature	00010	Note 1	°C	4	15	28	15
Total Dissolved Solids	70300	1000	mg/L	234		402	333
Toxaphene	39400	5.0	ug/L			< 1.0	
2,4-D	39730	20	ug/L			0.49	
2,4,5-TP/Silvex	39760	10	ug/L			0.071	
Zinc	01092	1000	ug/L	< 50		< 50	< 50

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1984/NPDES Compliance Monitoring Reports

Year: 1984

Table D-4 (Continued)

Site: #8

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Gross Alpha	03501	100	pCi/L	—	—	—	
Heptachlor	39410	0.1	ug/L			< 0.02	
Heptachlor Epoxide	39420	0.1	ug/L			0.074	
Iron	01045	1000	ug/L	1429		461	635
Lead	01051	100	ug/L			< 20	< 20
Lindane	39782	5.0	ug/L			< 0.01	
Manganese	01055	1000	ug/L	325		334	233
Mercury	71900	0.5	ug/L	< 1		< 1	< 1
Methyoxychlor	39480	100	ug/L			< 0.2	
Nickel	01067	1000	ug/L	< 50		< 50	< 50
Oil & Grease	00560	-	mg/L	22		< 0.3	5.4
pH (Hydrogen Ion)	00400	6.5-9.0	Units	8.49	9.41	8.44	7.90
Phenols	32730	100	ug/L	< 10		< 10	< 10
Phosphorus	00665	0.05	mg/L	0.32		0.45	0.3
Radium - 226	09501	1	pCi/L	—	—	—	
Selenium	01147	1000	ug/L	< 10		< 10	< 10
Silver	01077	5.0	ug/L	< 10		< 10	< 10
Strontium - 90	13501	2	pCi/L	—	—	—	

AF FORM 3137 SEP 77 GENERAL PURPOSE

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POLLUTION MONITORING PROGRAM - Year: 1984

Table D-4 (Continued)

Site: # 8

SAMPLING SITE IDENTIFIER: 0174 - NA - 008

SITE DESCRIPTION: North Ditch Entering Silver Creek

STANDARDS: Illinois Pollution Control Board Rules & Regulations, Chap 3, Part II, Para 203, 1 Aug 1980.

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Aldrin	39330	1.0	ug/L			< 0.02	
Ammonia	00610	1.5	mg/L	0.7		< 0.2	< 0.2
Arsenic	01002	1000	ug/L	< 10		< 10	< 10
Barium	01007	5000	ug/L	< 200		< 200	< 200
Boron	01022	1000	ug/L	< 500		< 500	< 500
Cadmium	01027	50	ug/L	< 10		< 10	< 10
Chemical Oxygen Demand	00340	-	mg/L	—	—	—	225
Chlordane	39350	3.0	ug/L			< 0.2	
Chloride	00940	500	mg/L	20		32	12
Chromium (III)	01033	1000	ug/L	< 50		< 50	< 50
Chromium (VI)	01032	50	ug/L	< 50		< 50	< 50
Copper	01042	20	ug/L	< 20		< 20	< 20
Cyanide	00720	0.025	mg/L	< 0.01		< 0.01	< 0.01
DDT	39370	50	ug/L			< 0.02	
Dieldrin	39380	1.0	ug/L			0.038	
Dissolved Oxygen	00300	>6.0	mg/L	0.9	11.0	9.0	9.0
Endrin	39390	0.5	ug/L			< 0.02	
Fluoride	00951	1.4	mg/L	0.2		0.4	0.3

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Year: 1984 Table D-4 (Continued) Site: #9

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Nickel	01067	1000	ug/L			<50	<50
Oil & Grease	00560	-	mg/L	1.0		< 0.3	<0.3
pH (Hydrogen Ion)	00400	6.5-9.0	Units	8.34	8.42	8.25	8.19
Phenols	32730	100	ug/L	10		<10	<10
Phosphorus	00665	0.05	mg/L	0.27		2.5	0.6
Radium - 226	09501	1	pCi/L	—	—	—	
Selenium	01147	1000	ug/L	10		< 10	<10
Silver	01077	5.0	ug/L	< 10		<10	<10
Strontium - 90	13501	2	pCi/L	—	—	—	
Sulfates	00945	500	mg/L	38		76	21
Surfactants	38260	-	mg/L	—	—	—	<0.1
Temperature	00010	Note 1	°C	11	15	28	12
Total Dissolved Solids	70300	1000	mg/L	214		404	146
Zinc	01092	1000	ug/L	<50		< 50	<50

AF FORM 3137 GENERAL PURPOSE

1984/NPDES Compliance Monitoring Reports

POLLUTION MONITORING PROGRAM - Year: 1984 Table D-4 (Continued) Site: #9

SAMPLING SITE IDENTIFIER: 0174-NA-009 SITE DESCRIPTION: Silver Creek Leaving Scott AFB

STANDARDS: Illinois Pollution Control Board Rules & Regulations, Chap 3, Part II, Para 203, 1 Aug 1980.

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Ammonia	00610	1.5	mg/L	0.5		< 0.2	0.4
Arsenic	01002	1000	ug/L	< 10		< 10	< 10
Barium	01007	5000	ug/L	< 200		< 200	
Boron	01002	1000	ug/L	< 500		< 500	< 500
Cadmium	01027	50	ug/L	< 10		< 10	< 10
Chemical Oxygen Demand	00340	-	mg/L	—	—	—	27
Chloride	00940	500	mg/L	20		44	8.0
Chromium (III)	01033	1000	ug/L	< 50		< 50	< 50
Chromium (VI)	01032	50	ug/L	< 50		< 50	< 50
Copper	01042	20	ug/L	< 20		< 20	< 20
Cyanide	00720	0.025	mg/L	< 0.01		< 0.01	< 0.01
Dissolved Oxygen	00300	> 6.0	mg/L	0.5	11.0	10.0	9.0
Fluoride	00951	1.4	mg/L	0.2		0.5	0.22
Gross Beta	03501	100	pCi/L	—	—	—	
Iron	01045	1000	ug/L	3037		437	2177
Lead	01051	100	ug/L	< 20		< 20	< 20
Manganese	01055	1000	ug/L	< 50		481	406
Mercury	71900	0.5	ug/L	< 1		< 1	< 1

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Table D-4 (Continued)

Year: 1984 Site: #10

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
2,4 - D	39730	20	ug/L			1.1	
2,4,5 - TP/Silvex	39760	10	ug/L			0.056	
Zinc	01092	1000	ug/L	< 50		< 50	< 50

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1984/NPDES Compliance Monitoring Reports

Year: 1984

Table D-4 (Continued)

Site: #10

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Iron (Total)	01045	2000	ug/L	1201		288	498
Iron (Dissolved)	01046	500	ug/L	—	—	—	-
Lead	01051	100	ug/L	< 20		< 20	< 20
Lindane	39782	5.0	ug/L			< 0.01	
Manganese	01055	1000	ug/L	642		133	189
Mercury	71900	0.5	ug/L	< 1		< 1	< 1
Methyoxychlor	39480	100	ug/L			< 0.2	
Nickel	01067	1000	ug/L	< 50		< 50	< 50
Oil & Grease	00560	15.0	mg/L	3.0		2.8	< 0.3
pH (Hydrogen Ion)	00400	6.0-9.0	Units	8.49	8.69	10.09	8.08
Phenols	32730	300	ug/L	< 10		< 10	< 10
Phosphorus	00665	0.05	mg/L	0.22		0.14	< 0.1
Selenium	01147	1000	ug/L	< 10		< 10	< 10
Silver	01077	100	ug/L	< 10		< 10	< 10
Surfactants	38260	-	mg/L	—	—	—	< 0.1
Temperature	00010	34	°C	10	12	28	15
Total Dissolved Solids	70300	1500	mg/L	113		108	56
Toxaphene	39400	5.0	ug/L			< 1.0	

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1984/NPDES Compliance Monitoring Reports

POLLUTION MONITORING PROGRAM - Year: 1984 Table D-4 (Continued) Site: # 10

SAMPLING SITE IDENTIFIER: 0174-NA-010 SITE DESCRIPTION: Scott Lake

STANDARDS: Illinois Pollution Control Board Rules & Regulations, Chap 3, Para 205, 1 Aug 1980.

PARAMETER	STORET NUMBER	CRITERIA	UNITS	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER
Aldrin	39330	1.0	ug/L			< 0.02	
Ammonia	00610	4.0	mg/L	0.3		< 0.2	0.3
Arsenic	01002	1000	ug/L	<10		<10	<10
Barium	01007	5000	ug/L	< 200		< 200	< 200
Cadmium	01027	150	ug/L	< 10		<10	<10
Chemical Oxygen Demand	00340	-	mg/L	—	—	—	20
Chlordane	39350	3.0	ug/L			< 0.2	
Chromium (III)	01033	1000	ug/L	< 50		< 50	<50
Chromium (VI)	01032	300	ug/L	< 50		< 50	<50
Copper	01042	1000	ug/L	< 20		< 20	21
Cyanide	00720	0.1	mg/L	<0.01		< 0.01	< 0.01
DDT	39370	50	ug/L			< 0.02	
Dieldrin	39380	1.0	ug/L			<0.02	
Dissolved Oxygen	00300	>4.0	mg/L	13.0	12.0	13.0	6.0
Endrin	39390	0.5	ug/L			< 0.02	
Fluoride	00951	15.0	mg/L	0.1		0.2	0.18
Heptachlor	39410	0.1	ug/L			< 0.02	
Heptachlor Epoxide	39420	0.1	ug/L			< 0.02	

AF FORM SEP 77 3137 GENERAL PURPOSE

APPENDIX E

MASTER LIST OF SHOPS

TABLE E.1
MASTER LIST OF SHOPS
AT SCOTT AFB

Shop	Bldg. No.	Handles Hazardous Material	Generates Hazardous Material	Typical TSD Methods
375th Air Base Group (MAC) - Civil Engineering				
Maintenance (Paint)	1600	Yes	Yes	Landfill/DPDO
Carpentry/Masonry	528	Yes	No	Consumed in Process
Equipment Operations	528	Yes	Yes	DPDO
Electrical Power Production	538	Yes	No	Consumed in Process
Entomology	513	Yes	Yes	Re-used in Mix-water/ storm sewer
Exterior Electric	514	Yes	Yes	DPDO
Fire Department	460	Yes	No	Consumed in Process
Fire Department Maint.	460	Yes	No	Consumed in Process
Grounds Maintenance	528	Yes	Yes	Re-used in Mix-water/ storm sewer
Heating Plant Ops/Shop	45	No	No	Consumed in Process
Liquid Fuels Maintenance	516	Yes	Yes	DPDO
Pavement Shop	CE Yard	Yes	No	Consumed in Process
Plumbing Shop	CE Yard	Yes	No	Consumed in Process

TABLE E.1
MASTER LIST OF SHOPS
AT SCOTT AFB
(Continued)

Shop	Bldg. No.	Handles Hazardous Material	Generates Hazardous Material	Typical TSD Methods
375th Air Base Group (MAC) - Civil Engineering (Continued)				
Refrigeration and Repair	532	Yes	No	Consumed in Process
Refuse Collection and Disposal	533	Yes	No	Landfill off and on base
Sewage Treatment Plant	3290	Yes	No	Landfill
375th Aeromedical Airlift Wing - Consolidated Aircraft Maint. Squadron				
Aerospace Ground Equip.	433	Yes	Yes	DPDO
Auto Flight Control and Instruments	450	No	No	---
Battery Shop	441	Yes	Yes	DPDO, Storm and Sanitary
Cleaning and Electroplating	441	Yes	Yes	DPDO, Sanitary and Storm Sewer
Communications and Navigation	350	Yes	No	Consumed in Process
Corrosion Control	441	Yes	Yes	DPDO, Sanitary Sewer
Electrical Systems	433	Yes	No	Consumed in Process
Fabric and Survival Systems	450	Yes	Yes	DPDO
Fuel System Shop	455	Yes	No	Consumed in Process

TABLE E.1
MASTER LIST OF SHOPS
AT SCOTT AFB
(Continued)

Shop	Bldg. No.	Handles Hazardous Material	Generates Hazardous Material	Typical TSD Methods
375th Aeromedical Airlift Wing - Consolidated Aircraft Maint. Squad. (Cont.)				
Jet Engine Shop	455	Yes	Yes	DPDO
Jet Engine Test Cell	6900	Yes	Yes	Storm Sewer
Machine and Welding	441	Yes	No	Consumed in Process
PMEL/NDI-Lab	3665	Yes	Yes	DPDO
Flightline Maint. C-140	506	Yes	Yes	DPDO
Flightline Maint. C-9	441	Yes	Yes	DPDO
Pneudralics Shop	433	Yes	Yes	DPDO
Repair and Reclamation	433	Yes	Yes	DPDO
Structural Repair	433	Yes	No	Consumed in Process
Wheel and Tire	506	Yes	Yes	DPDO
375th Aeromedical Airlift Wing - Supply Squadron				
Fuels Lab	382	Yes	No	Sanitary Sewer
Fuel Operation	382	Yes	No	Consumed in Process
Liquid Oxygen Storage	1043	Yes	No	Consumed in Process

TABLE E.1
MASTER LIST OF SHOPS
AT SCOTT AFB
(Continued)

Shop	Bldg. No.	Handles Hazardous Material	Generates Hazardous Material	Typical TSD Methods
375th Aeromedical Airlift Wing - Transportation Squadron				
Base Veh. Maint./Allied Trades	53	Yes	Yes	DPDO
General and Special Vehicle/Allied Trades	53	Yes	Yes	DPDO
Pack and Crate	3660	Yes	No	Consumed in Process
Refueling Vehicle Maint.	3184	Yes	Yes	DPDO
USAF Scott Medical Center				
Clinical Laboratory-Histopathology-Cytology	1536	Yes	Yes	DPDO, Sanitary Sewer
Dental Clinic/Laboratory	1680	Yes	Yes	DPDO, Sanitary Sewer, Medical Logistics
Radiology/X-Ray	1680	Yes	Yes	DPDO, Sanitary Sewer
Medical Photographer	1536	Yes	Yes	DPDO, Sanitary Sewer
1974th Information Systems				
Navaids	1534	No	No	-

TABLE E.1
MASTER LIST OF SHOPS
AT SCOTT AFB
(Continued)

Shop	Bldg. No.	Handles Hazardous Material	Generates Hazardous Material	Typical TSD Methods
1974th Information Systems (Continued)				
Radio Maint.	1534	No	No	-
Transmitter Maint.	250	No	No	-
375th Air Base Group Administration				
Audivisual Services and Photo Lab	700	Yes	Yes	DPDO
102 U.S. Army Reserve Aviation				
Aircraft Maint.	3680	Yes	Yes	DPDO
Avionics	3680	Yes	No	Consumed in Process
Jet Engine Shop	3680	Yes	Yes	DPDO
Sheet Metal Shop	3680	Yes	No Process	Consumed in
375th Air Base Group - Morale, Welfare, Recreation Division				
Aero Club	3650	Yes	Yes	FPTA/DPDO
Photo Hobby	1989	Yes	Yes	Sanitary Sewer Silver Recovery
Auto Hobby	1989	Yes	Yes	Off-Base Contractor

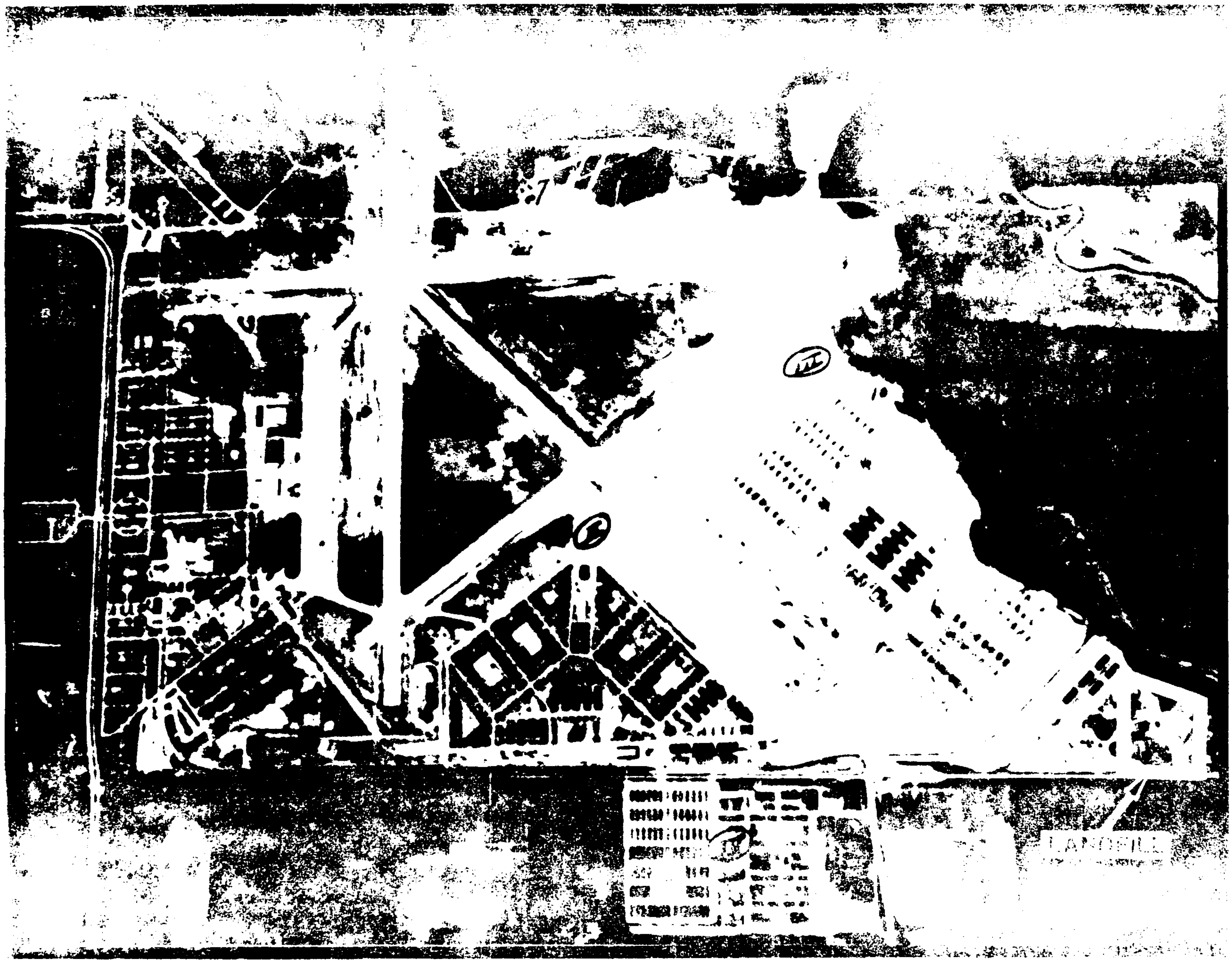
TABLE E.2
MASTER LIST OF SHOPS
AT ST. LOUIS AFS

Name	Present Location Bldg.No.	Handles Hazardous Materials	Generates Hazardous Waste	Typical TSD Methods
St. Louis AFS - Defense Mapping Agency Aerospace Center (DMAAC) Scientific Data Department				
Scientific Computer Division	36	No	No	-
Cartographic Data Base Division	36	No	No	-
Precision Photographic Division	36	Yes	Yes	Silver Recovery/ Sanitary Sewer, Accumulation
St. Louis AFS - DMAAC Graphic Arts Department				
Photo/Plate Division	89002	Yes	Yes	Silver Recovery/ Sanitary Sewer
Negative/Engraving Division	89002	Yes	No	Consumed in Process
Printing/Finishing Division	89002	Yes	Yes	Consumed in Process, DPDO
St. Louis AFS - DMACC Directorate of Logistics				
Materials Destruction Branch	89001	No	No	-

TABLE E.2
MASTER LIST OF SHOPS
AT ST. LOUIS AFS
(Continued)

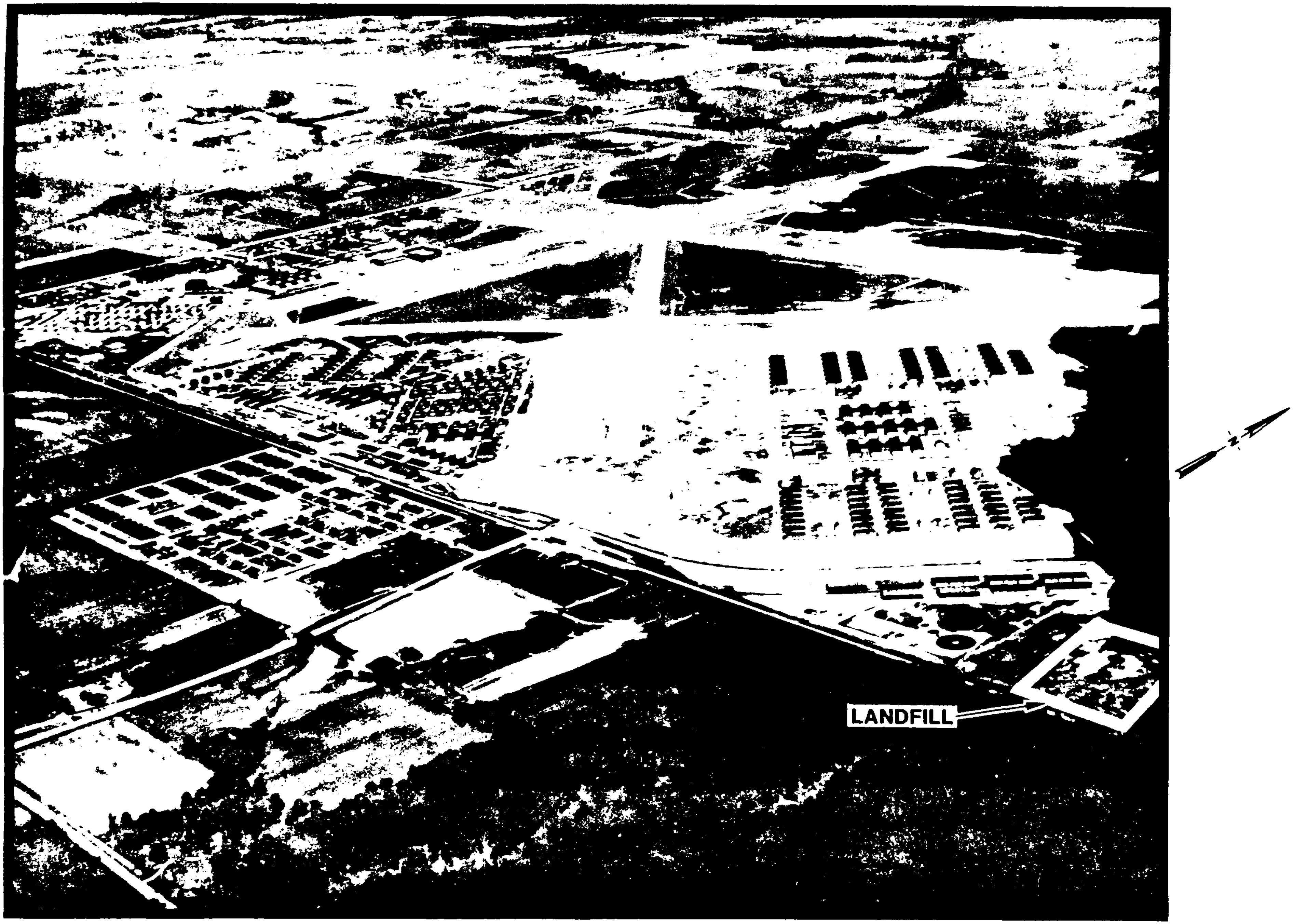
Name	Present Location Bldg.No.	Handles Hazardous Materials	Generates Hazardous Waste	Typical TSD Methods
Directorate of Logistics (Continued)				
Vehicle Operation & Maintenance Branch	89001	Yes	Yes	DPDO, Sanitary Sewer
Equipment Maintenance Shops	36	Yes	No	Consumed in Process
St. Louis AFS - DMAAC Directorate of Facilities Engineering				
Structures, Masonry and Paint Section	36	Yes	No	Consumed in Process
Roads, Grounds and Entomology Section	2	Yes	No	Consumed in Process
Electrical Section	36	No	No	-
Air Conditioning Section	36	Yes	Yes	DPDO
Heating Sections 1 & 2	40 & 89001	Yes	No	Consumed in Process
Pipefitting Section	16	No	No	-
Alarms, Environmental Controls Section	36	No	No	-
Custodial Services Sections 1, 2 & 3	36	No	No	-

APPENDIX F



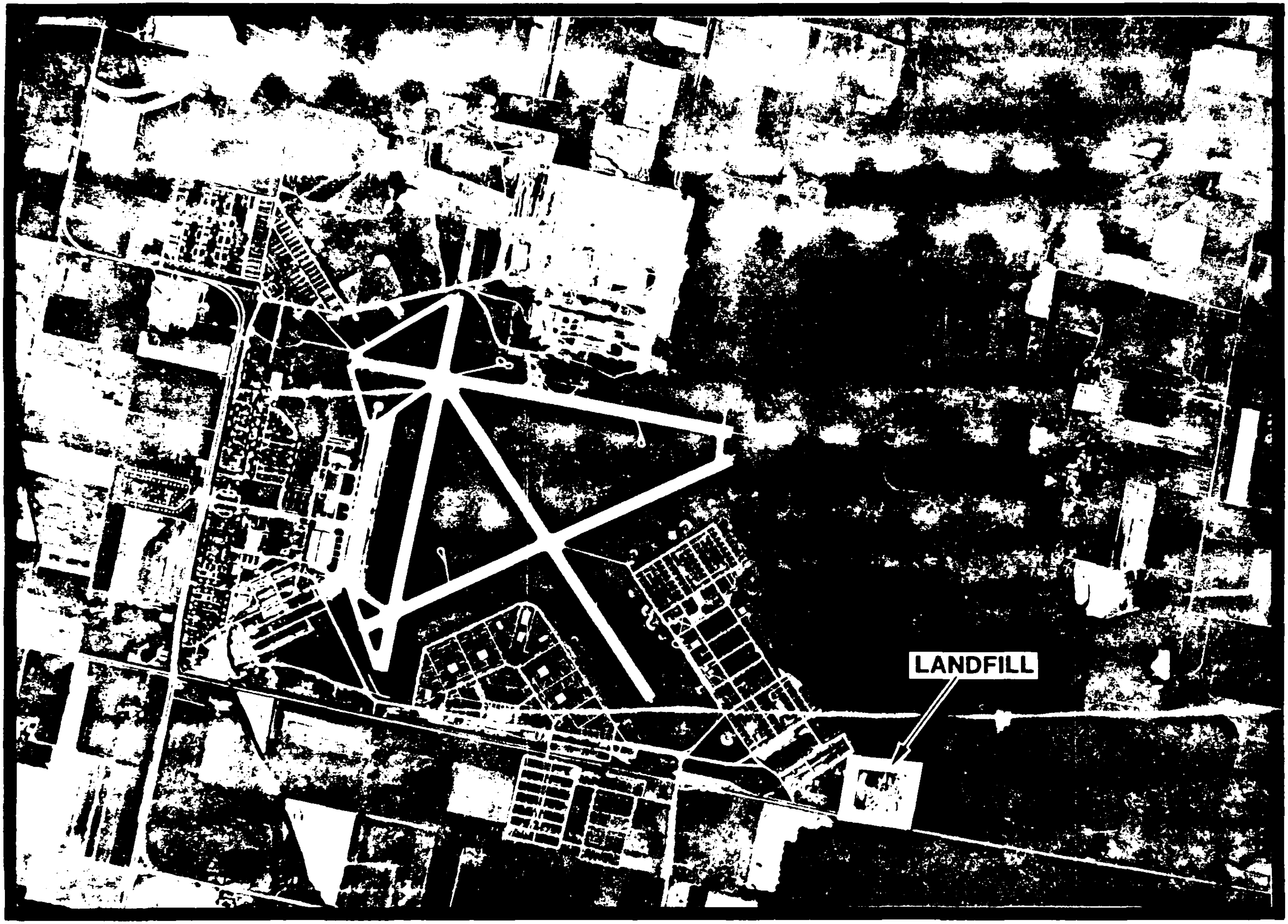
SCOTT AFB, ILLINOIS

CIRCA 1941

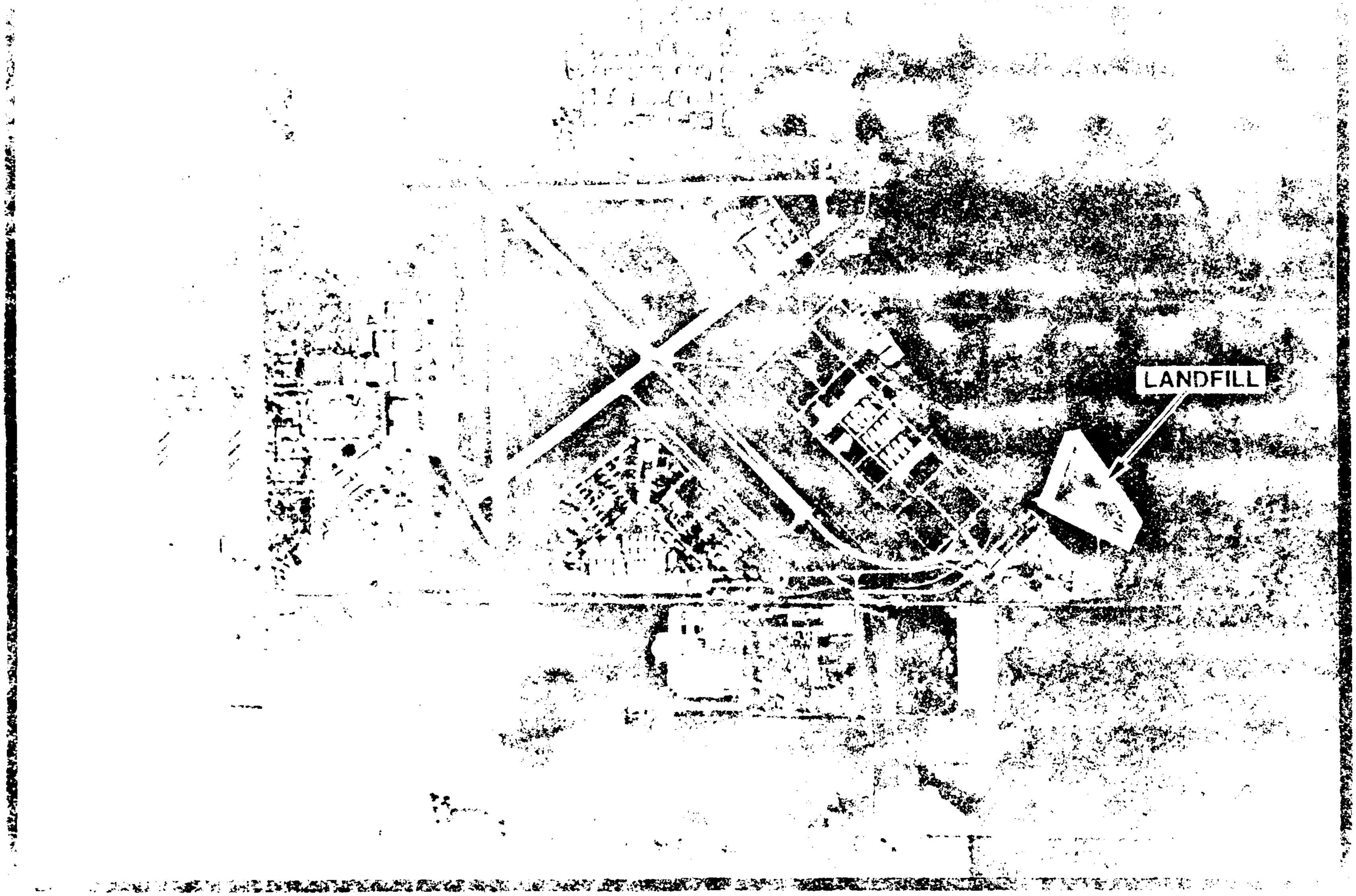


SCOTT AFB, ILLINOIS

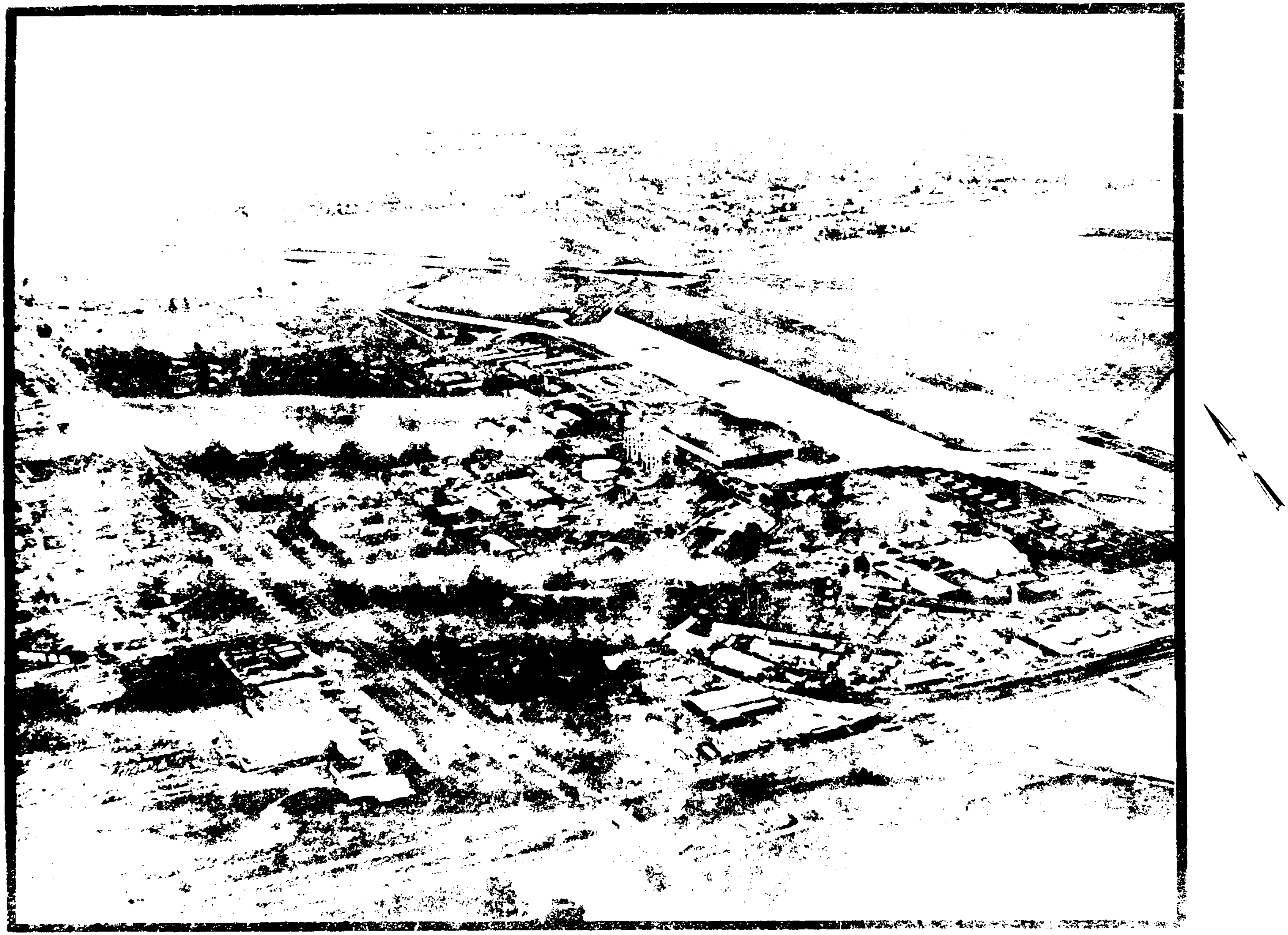
1943



SCOTT AFB, ILLINOIS 1951



SCOTT AFB, ILLINOIS 1969

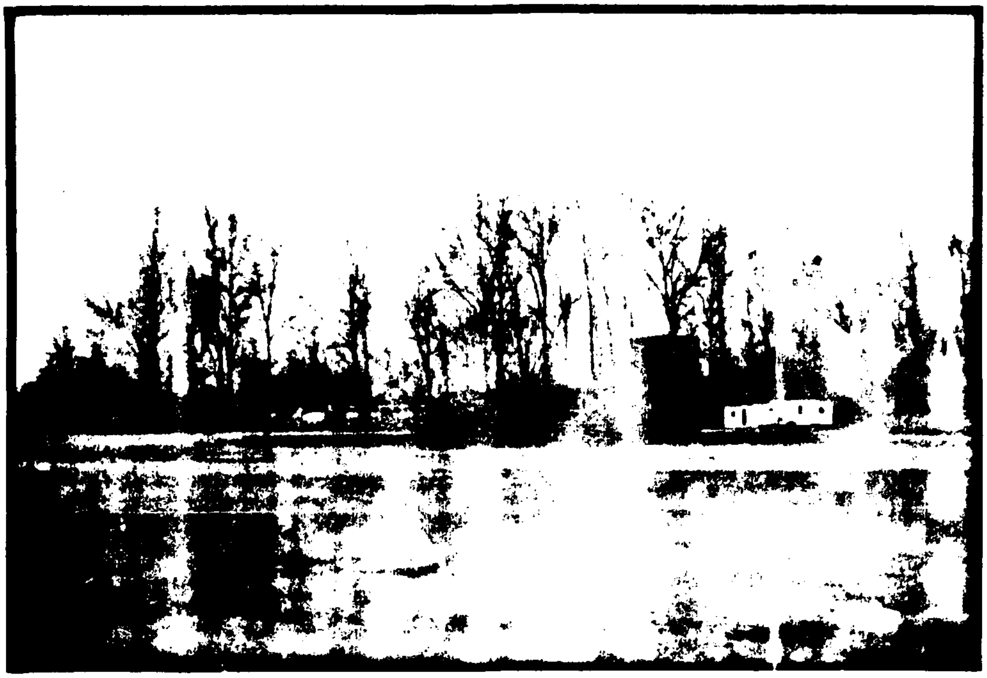


SCOTT AFB, ILLINOIS 1934

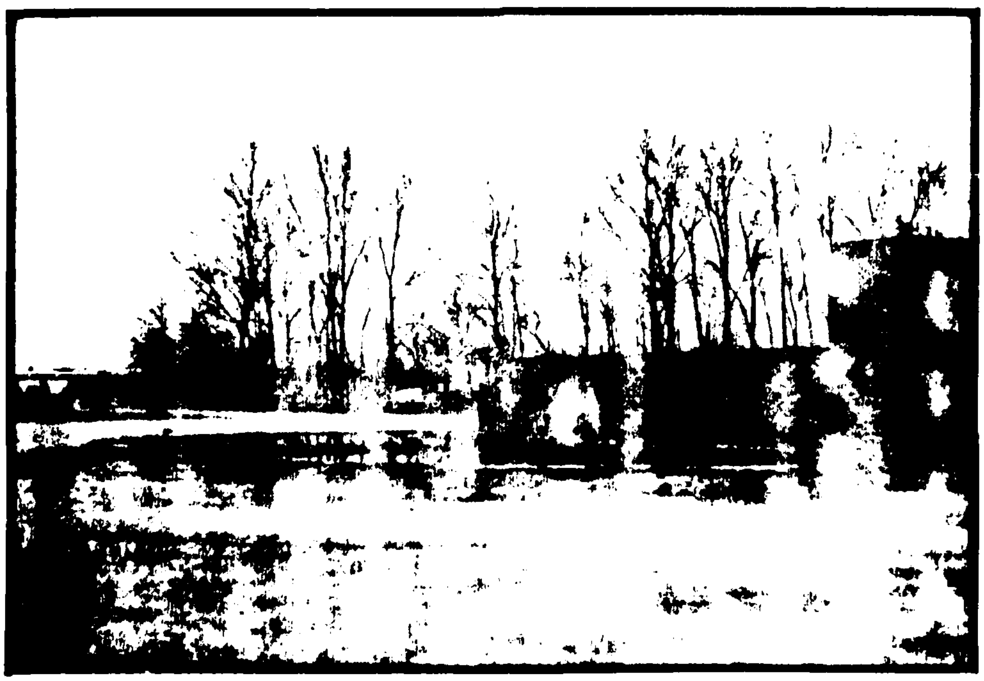
Landfill

Landfill

SCOTT AFB



Fire Protection Training Area No. 3

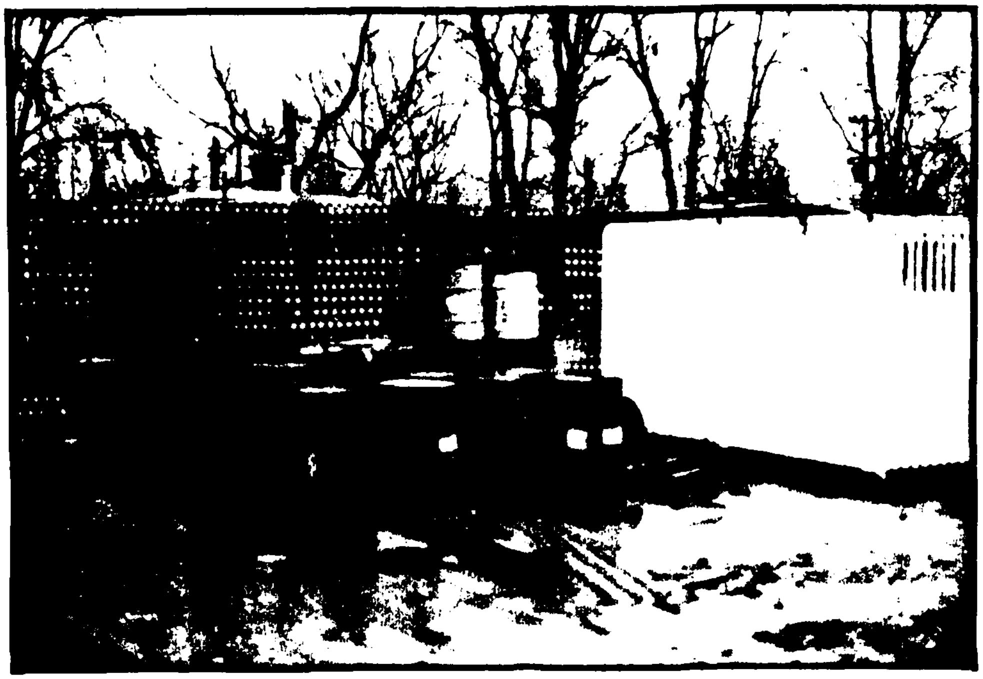


Fire Protection Training Area No. 3

Civil Engineering Storage Yard

POL Tanks
(Facilities 8550 and 8570)

SCOTT AFB



DPDO Storage Yard

DPDO Storage Yard

Low-level Radioactive Waste Disposal Site

Small Arms Range
(Site of Fire Protection Training Area No. 2)

APPENDIX G

USAF INSTALLATION RESTORATION PROGRAM

HAZARD ASSESSMENT RATING METHODOLOGY

APPENDIX G

USAF INSTALLATION RESTORATION PROGRAM
HAZARD ASSESSMENT RATING METHODOLOGY

BACKGROUND

The Department of Defense (DOD) has established a comprehensive program to identify, evaluate, and control problems associated with past disposal practices at DOD facilities. One of the actions required under this program is to:

> "develop and maintain a priority listing of contaminated installations and facilities for remedial action based on potential hazard to public health, welfare, and environmental impacts." (Reference: DEQPPM 81-5, 11 December 1981).

Accordingly, the United States Air Force (USAF) has sought to establish a system to set priorities for taking further actions at sites based upon information gathered during the Records Search phase of its Installation Restoration Program (IRP).

The first site rating model was developed in June 1981 at a meeting with represenatives from USAF Occupational and Environmental Health Laboratory (OEHL), Air Force Engineering and Services Center (AFESC), Engineering-Science (ES) and CH2M Hill. The basis for this model was a system developed for EPA by JRB Associates of McLean, Virginia. The JRB model was modified to meet Air Force needs.

After using this model for 6 months at over 20 Air Force installations, certain inadequacies became apparent. Therefore, on January 26 and 27, 1982, representatives of USAF OEHL, AFESC, various major commands, Engineering-Science, and CH2M Hill met to address the inadequacies. The result of the meeting was a new site rating model designed to present a better picture of the hazards posed by sites at Air Force installations. The new rating model described in this presentation is referred to as the Hazard Assessment Rating Methodology.

PURPOSE

The purpose of the site rating model is to provide a relative ranking of sites of suspected contamination from hazardous substances. This model will assist the Air Force in setting priorities for follow-on site investigations and confirmation work under Phase II of the IRP.

This rating system is used only after it has been determined that (1) potential for contamination exists (hazardous wastes present in sufficient quantity), and (2) potential for migration exists. A site can be deleted from consideration for rating on either basis.

DESCRIPTION OF MODEL

Like the other hazardous waste site ranking models, the U.S. Air Force's site rating model uses a scoring system to rank sites for priority attention. However, in developing this model, the designers incorporated some special features to meet specific DOD program needs.

The model uses data readily obtained during the Records Search portion (Phase I) of the IRP. Scoring judgments and computations are easily made. In assessing the hazards at a given site, the model develops a score based on the most likely routes of contamination and the worst hazards at the site. Sites are given low scores only if there are clearly no hazards at the site. This approach meshes well with the policy for evaluating and setting restrictions on excess DOD properties.

As with the previous model, this model considers four aspects of the hazard posed by a specific site: the possible receptors of the contamination, the waste and its characteristics, potential pathways for waste contaminant migration, and any efforts to contain the contaminants. Each of these categories contains a number of rating factors that are used in the overall hazard rating.

The receptors category rating is calculated by scoring each factor, multiplying by a factor weighting constant and adding the weighted scores to obtain a total category score.

The pathways category rating is based on evidence of contaminant migration or an evaluation of the highest potential (worst case) for contaminant migration along one of three pathways. If evidence of contaminant migration exists, the category is given a subscore of 80 to 100 points. For indirect evidence, 80 points are assigned and for direct evidence, 100 points are assigned. If no evidence is found, the highest score among three possible routes is used. These routes are surface water migration, flooding, and ground-water migration. Evaluation of each route involves factors associated with the particular migration route. The three pathways are evaluated and the highest score among all four of the potential scores is used.

The waste characteristics category is scored in three steps. First, a point rating is assigned based on an assessment of the waste quantity and the hazard (worst case) associated with the site. The level of confidence in the information is also factored into the assessment. Next, the score is multiplied by a waste persistence factor, which acts to reduce the score if the waste is not very persistent. Finally, the score is further modified by the physical state of the waste. Liquid wastes receive the maximum score, while scores for sludges and solids are reduced.

The scores for each of the three categories are then added together and normalized to a maximum possible score of 100. Then the waste management practice category is scored. Sites at which there is no containment are not reduced in score. Scores for sites with limited containment can be reduced by 5 percent. If a site is contained and well managed, its score can be reduced by 90 percent. The final site score is calculated by applying the waste management practices category factor to the sum of the scores for the other three categories.

HAZARD ASSESSMENT RATING METHODOLOGY FLOW CHART

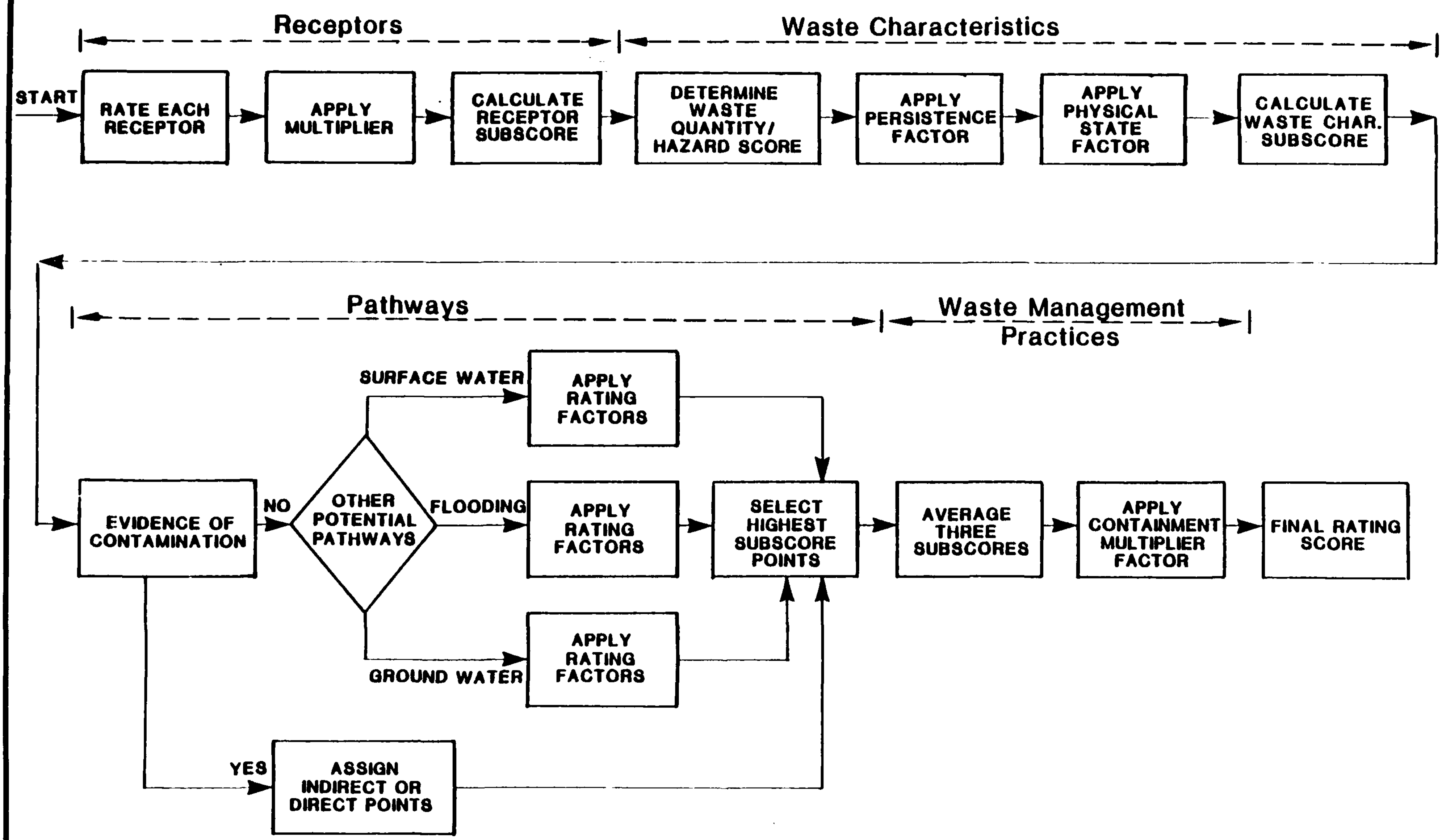


FIGURE 2

HAZARD ASSESSMENT RATING METHODOLOGY FORM

NAME OF SITE ______

LOCATION ______

DATE OF OPERATION OR OCCURRENCE ______

OWNER/OPERATOR ______

COMMENTS/DESCRIPTION ______

SITE RATED BY ______

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site		4		
B. Distance to nearest well		10		
C. Land use/zoning within 1 mile radius		3		
D. Distance to reservation boundary		6		
E. Critical environments within 1 mile radius of site		10		
F. Water quality of nearest surface water body		6		
G. Ground water use of uppermost aquifer		9		
H. Population served by surface water supply within 3 miles downstream of site		6		
I. Population served by ground-water supply within 3 miles of site		6		
Subtotals			______	______

Receptors subscore (100 X factor score subtotal/maximum score subtotal) ______

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) ______
2. Confidence level (C = confirmed, S = suspected) ______
3. Hazard rating (H = high, M = medium, L = low) ______

Factor Subscore A (from 20 to 100 based on factor score matrix) ______

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

______ X ______ = ______

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

______ X ______ = ______

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore ______

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Distance to nearest surface water		8		
Net precipitation		6		
Surface erosion		8		
Surface permeability		6		
Rainfall intensity		8		
		Subtotals	______	______

Subscore (100 X factor score subtotal/maximum score subtotal) ______

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
2. Flooding		1		

Subscore (100 x factor score/3) ______

3. Ground-water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Depth to ground water		8		
Net precipitation		6		
Soil permeability		3		
Subsurface flows		8		
Direct access to ground water		8		
		Subtotals	______	______

Subscore (100 x factor score subtotal/maximum score subtotal) ______

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore ______

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors ______
Waste Characteristics ______
Pathways ______

Total ______ divided by 3 = ______
Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

______ X ______ = ______

TABLE 1

HAZARD ASSESSMENT RATING METHODOLOGY GUIDELINES

I. RECEPTORS CATEGORY

Rating Factors	Rating Scale Levels: 0	1	2	3	Multiplier
A. Population within 1,000 feet (includes on-base facilities)	0	1 - 25	26 - 100	Greater than 100	4
B. Distance to nearest water well	Greater than 3 miles	1 to 3 miles	3,001 feet to 1 mile	0 to 3,000 feet	10
C. Land Use/Zoning (within 1 mile radius)	Completely remote (zoning not applicable)	Agricultural	Commercial or industrial	Residential	3
D. Distance to installation boundary	Greater than 2 miles	1 to 2 miles	1,001 feet to 1 mile	0 to 1,000 feet	6
E. Critical environments (within 1 mile radius)	Not a critical environment	Natural areas	Pristine natural areas; minor wetlands; preserved areas; presence of economically important natural resources susceptible to contamination.	Major habitat of an endangered or threatened species; presence of recharge area; major wetlands.	10
F. Water quality/use designation of nearest surface water body	Agricultural or industrial use.	Recreation, propagation and management of fish and wildlife.	Shellfish propagation and harvesting.	Potable water supplies	6
G. Ground-Water use of uppermost aquifer	Not used, other sources readily available.	Commercial, industrial, or irrigation, very limited other water sources.	Drinking water, municipal water available.	Drinking water, no municipal water available; commercial, industrial, or irrigation, no other water source available.	9
H. Population served by surface water supplies within 3 miles downstream of site	0	1 - 50	51 - 1,000	Greater than 1,000	6
I. Population served by aquifer supplies within 3 miles of site	0	1 - 50	51 - 1,000	Greater than 1, 000	6

TABLE 1 (Continued)

HAZARD ASSESSMENT RATING METHODOLOGY GUIDELINES

II. WASTE CHARACTERISTICS

A-1 Hazardous Waste Quantity

S = Small quantity (<5 tons or 20 drums of liquid)
M = Moderate quantity (5 to 20 tons or 2' to 85 drums of liquid)
L = Large quantity (>20 tons or 85 drums of liquid)

A-2 Confidence Level of Information

C = Confirmed confidence level (minimum criteria below)

- o Verbal reports from interviewer (at least 2) or written information from the records.
- o Knowledge of types and quantities of wastes generated by shops and other areas on base.
- o Based on the above, a determination of the types and quantities of waste disposed of at the site.

S = Suspected confidence level

- o No verbal reports or conflicting verbal reports and no written information from the records.
- o Logic based on a knowledge of the types and quantities of hazardous wastes generated at the base, and a history of past waste disposal practices indicate that these wastes were disposed of at a site.

A-3 Hazard Rating

Hazard Category	Rating Scale Levels 0	1	2	3
Toxicity	Sax's Level 0	Sax's Level 1	Sax's Level 2	Sax's Level 3
Ignitability	Flash point greater than 200°F	Flash point at 140°F to 200°F	Flash point at 80°F to 140°F	Flash point less than 80°F
Radioactivity	At or below background levels	1 to 3 times background levels	3 to 5 times background levels	Over 5 times background levels

Use the highest individual rating based on toxicity, ignitability and radioactivity and determine the hazard rating.

Hazard Rating	Points
High (H)	3
Medium (M)	2
Low (L)	1

II. WASTE CHARACTERISTICS (Continued)

Waste Characteristics Matrix

Point Rating	Hazardous Waste Quantity	Confidence Level of Information	Hazard Rating
100	L	C	H
80	L	C	M
	M	C	H
70	L	S	H
60	S	C	H
	M	C	M
50	L	S	M
	L	C	L
	M	S	H
	S	C	M
40	S	S	H
	M	S	M
	M	C	L
	L	S	L
30	S	C	L
	M	S	L
	S	S	M
20	S	S	L

Notes:
For a site with more than one hazardous waste, the waste quantities may be added using the following rules:
Confidence Level
- o Confirmed confidence levels (C) can be added
- o Suspected confidence levels (S) can be added
- o Confirmed confidence levels cannot be added with suspected confidence levels

Waste Hazard Rating
- o Wastes with the same hazard rating can be added
- o Wastes with different hazard ratings can only be added in a downgrade mode, e.g., MCM + SCH = LCM if the total quantity is greater than 20 tons.

Example: Several wastes may be present at a site, each having an MCM designation (60 points). By adding the quantities of each waste, the designation may change to LCM (80 points). In this case, the correct point rating for the waste is 80.

B. Persistence Multiplier for Point Rating

Persistence Criteria	Multiply Point Rating From Part A by the Following
Metals, polycyclic compounds, and halogenated hydrocarbons	1.0
Substituted and other ring compounds	0.9
Straight chain hydrocarbons	0.8
Easily biodegradable compounds	0.4

C. Physical State Multiplier

Physical State	Multiply Point Total From Parts A and B by the Following
Liquid	1.0
Sludge	0.75
Solid	0.50

TABLE 1 (Continued)

HAZARD ASSESSMENT RATING METHODOLOGY GUIDELINES

III. PATHWAYS CATEGORY

A. Evidence of Contamination

Direct evidence is obtained from laboratory analyses of hazardous contaminants present above natural background levels in surface water, ground water, or air. Evidence should confirm that the source of contamination is the site being evaluated.

Indirect evidence might be from visual observation (i.e., leachate), vegetation stress, sludge deposits, presence of taste and odors in drinking water, or reported discharges that cannot be directly confirmed as resulting from the site, but the site is greatly suspected of being a source of contamination.

B-1 POTENTIAL FOR SURFACE WATER CONTAMINATION

Rating Factor	Rating Scale Levels 0	1	2	3	Multiplier
Distance to nearest surface water (includes drainage ditches and storm sewers)	Greater than 1 mile	2,001 feet to 1 mile	501 feet to 2,000 feet	0 to 500 feet	8
Net precipitation	Less than -10 in.	-10 to + 5 in.	+5 to +20 in.	Greater than +20 in.	6
Surface erosion	None	Slight	Moderate	Severe	8
Surface permeability	0% to 15% clay ($>10^{-2}$ cm/sec)	15% to 30% clay (10^{-2} to 10^{-4} cm/sec)	30% to 50% clay (10^{-4} to 10^{-6} cm/sec)	Greater than 50% clay ($<10^{-6}$ cm/sec)	6
Rainfall intensity based on 1 year 24-hr rainfall	<1.0 inch	1.0-2.0 inches	2.1-3.0 inches	>3.0 inches	8

B-2 POTENTIAL FOR FLOODING

Rating Factor	0	1	2	3	Multiplier
Floodplain	Beyond 100-year floodplain	In 25-year floodplain	In 10-year floodplain	Floods annually	1

B-3 POTENTIAL FOR GROUND-WATER CONTAMINATION

Rating Factor	0	1	2	3	Multiplier
Depth to ground water	Greater than 500 ft	50 to 500 feet	11 to 50 feet	0 to 10 feet	8
Net precipitation	Less than -10 in.	-10 to +5 in.	+5 to +20 in.	Greater than +20 in.	6
Soil permeability	Greater than 50% clay ($>10^{-6}$ cm/sec)	30% to 50% clay (10^{-4} to 10^{-6} cm/sec)	15% to 30% clay (10^{-2} to 10^{-4} cm/sec)	0% to 15% clay ($<10^{-2}$ cm/sec)	8
Subsurface flows	Bottom of site greater than 5 feet above high ground-water level	Bottom of site occasionally submerged	Bottom of site frequently submerged	Bottom of site located below mean ground-water level	8
Direct access to ground water (through faults, fractures, faulty well [illegible] etc.)	No evidence of risk	Low risk	Moderate risk	High risk	8

TABLE 1 (Continued)

HAZARD ASSESSMENT RATING METHODOLOGY GUIDELINES

IV. WASTE MANAGEMENT PRACTICES CATEGORY

A. This category adjusts the total risk as determined from the receptors, pathways, and waste characteristics categories for waste management practices and engineering controls designed to reduce this risk. The total risk is determined by first averaging the receptors, pathways, and waste characteristics subscores.

B. WASTE MANAGEMENT PRACTICES FACTOR

The following multipliers are then applied to the total risk points (from A):

Waste Management Practice	Multiplier
No containment	1.0
Limited containment	0.95
Fully contained and in full compliance	0.10

Guidelines for fully contained:

Landfills:

- o Clay cap or other impermeable cover
- o Leachate collection system
- o Liners in good condition
- o Adequate monitoring wells

Spills:

- o Quick spill cleanup action taken
- o Contaminated soil removed
- o Soil and/or water samples confirm total cleanup of the spill

Surface Impoundments:

- o Liners in good condition
- o Sound dikes and adequate freeboard
- o Adequate monitoring wells

Fire Proection Training Areas:

- o Concrete surface and berms
- o Oil/water separator for pretreatment of runoff
- o Effluent from oil/water separator to treatment plant

General Note: If data are not available or known to be complete the factor ratings under items I-A through I, III-B-1 or III-B-3, then leave blank for calculation of factor score and maximum possible score.

APPENDIX H

SITE HAZARD ASSESSMENT RATING FORMS

APPENDIX H

TABLE OF CONTENTS

HAZARD ASSESSMENT RATING METHODOLOGY FORM

Name of site: Fire Protection Training Area No. 2 (FPTA#2)
Location: Southeast corner by Treatment Plant
Date of Operation: 1952 to 1969
Owner/Operator: Scott AFB
Comments/Description: Monthly or biweekly use of waste gasoline, JP-4, Alcohol poured on gravel and ignited, about 300 - 500 gal. per burn.
Site Rated by: J.R.Absalon; J.R.Butner; E.H.Snider

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	2	4	8	12
B. Distance to nearest well	3	10	30	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to installation boundary	3	6	18	18
E. Critical environments within 1 mile radius of site	2	10	20	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	3	9	27	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	2	6	12	18
Subtotals			130	180

Receptors subscore (100 x factor score subtotal/maximum score subtotal) 72

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (small, medium, or large) L = large
2. Confidence level (confirmed or suspected) C = confirmed
3. Hazard rating (low, medium, or high) H = high

Factor Subscore A (from 20 to 100 based on factor score matrix) 100

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

100 x 1.00 = 100

C. Apply physical state multiplier
Subscore B x Physical State Multiplier = Waste Characteristics Subscore

100 x 1.00 = 100

III. PATHWAYS

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore 0

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating and proceed to C.

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
1. Surface Water Migration				
Distance to nearest surface water	3	8	24	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	1	6	6	18
Rainfall intensity	2	8	16	24
Subtotals			60	108
Subscore (100 x factor score subtotal/maximum score subtotal)				56
2. Flooding	0	1	0	3
Subscore (100 x factor score/3)				0
3. Ground-water migration				
Depth to ground water	2	8	16	24
Net precipitation	1	6	6	18
Soil permeability	2	8	16	24
Subsurface flows	0	8	0	24
Direct access to ground water	1	8	8	24
Subtotals			46	114
Subscore (100 x factor score subtotal/maximum score subtotal)				40

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 56

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	72		
Waste Characteristics	100		
Pathways	56		
Total 228 divided by 3 =		76	Gross total score

B. Apply factor for waste containment from waste management practices.

Gross total score x waste management practices factor = final score

76 x 1.00 = 76

FINAL SCORE

HAZARD ASSESSMENT RATING METHODOLOGY FORM

Name of site: Landfill
Location: Southeast section of base
Date of Operation: 1945 to 1977 and 1983 to pesent
Owner/Operator: Scott AFB
Comments/Description: Solid waste, oils, paint, pesticides, transformers, sludges

Site Rated by: J.R.Absalon; J.R.Butner; E.H.Snider

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	2	4	8	12
B. Distance to nearest well	3	10	30	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to installation boundary	3	6	18	18
E. Critical environments within 1 mile radius of site	2	10	20	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	3	9	27	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	2	6	12	18
Subtotals			130	180

Receptors subscore (100 x factor score subtotal/maximum score subtotal) 72

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (small, medium, or large) M = medium
2. Confidence level (confirmed or suspected) C = confirmed
3. Hazard rating (low, medium, or high) H = high

Factor Subscore A (from 20 to 100 based on factor score matrix) 80

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

80 x 1.00 = 80

C. Apply physical state multiplier
Subscore B x Physical State Multiplier = Waste Characteristics Subscore

80 x 1.00 = 80

III. PATHWAYS

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore 0

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating and proceed to C.

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
1. Surface Water Migration				
Distance to nearest surface water	3	8	24	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	0	6	0	18
Rainfall intensity	2	8	16	24
Subtotals			54	108
Subscore (100 x factor score subtotal/maximum score subtotal)				50
2. Flooding	2	1	2	3
Subscore (100 x factor score/3)				67
3. Ground-water migration				
Depth to ground water	3	8	24	24
Net precipitation	1	6	6	18
Soil permeability	3	8	24	24
Subsurface flows	1	8	8	24
Direct access to ground water	1	8	8	24
Subtotals			70	114
Subscore (100 x factor score subtotal/maximum score subtotal)				61

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 61

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors		72
Waste Characteristics		80
Pathways		67
Total	219	divided by 3 = 73 Gross total score

B. Apply factor for waste containment from waste management practices.

Gross total score x waste management practices factor = final score

73 x 1.00 = 73

FINAL SCORE

HAZARD ASSESSMENT RATING METHODOLOGY FORM

Name of site: Fire Protection Training Area(FPTA No. 1)
Location: Northeast corner of base,by Small Arms Range
Date of Operation: 1942 to 1952
Owner/Operator: Scott AFB
Comments/Description: Monthly burn of 200 -300 gal.,poured in ground and ignited.
Fuel includes paint, gasoline, and oils.
Site Rated by: J.R.Absalon; J.R.Butner; E.H.Snider

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	2	4	8	12
B. Distance to nearest well	1	10	10	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to installation boundary	3	6	18	18
E. Critical environments within 1 mile radius of site	2	10	20	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	3	9	27	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	2	6	12	18
Subtotals			110	180

Receptors subscore (100 x factor score subtotal/maximum score subtotal) 61

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (small, medium, or large) M = medium
2. Confidence level (confirmed or suspected) C = confirmed
3. Hazard rating (low, medium, or high) H = high

Factor Subscore A (from 20 to 100 based on factor score matrix) 80

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

80 x 1.00 = 80

C. Apply physical state multiplier
Subscore B x Physical State Multiplier = Waste Characteristics Subscore

80 x 1.00 = 80

III. PATHWAYS

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore 0

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating and proceed to C.

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
1. Surface Water Migration				
Distance to nearest surface water	3	8	24	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	1	6	6	18
Rainfall intensity	2	8	16	24
Subtotals			60	108
Subscore (100 x factor score subtotal/maximum score subtotal)				56
2. Flooding	0	1	0	3
Subscore (100 x factor score/3)				0
3. Ground-water migration				
Depth to ground water	2	8	16	24
Net precipitation	1	6	6	18
Soil permeability	2	8	16	24
Subsurface flows	0	8	0	24
Direct access to ground water	1	8	8	24
Subtotals			46	114
Subscore (100 x factor score subtotal/maximum score subtotal)				40

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 56

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors		61	
Waste Characteristics		80	
Pathways		56	
Total	197	divided by 3 =	66 Gross total score

B. Apply factor for waste containment from waste management practices.

Gross total score x waste management practices factor = final score

66 x 1.00 = 66

FINAL SCORE

s

HAZARD ASSESSMENT RATING METHODOLOGY FORM

Name of site: Facility 8550 Spill Site
Location: By CE yard off South Drive
Date of Operation: 1977
Owner/Operator: Scott AFB
Comments/Description: Leak of approx. 20,000 gal., 6000 gal. recovered, 1000 gal. went to adjacent creek and balance unaccounted for.
Site Rated by: J.R.Absalon; J.R.Butner; E.H.Snider

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	3	4	12	12
B. Distance to nearest well	3	10	30	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to installation boundary	3	6	18	18
E. Critical environments within 1 mile radius of site	1	10	10	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	3	9	27	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	2	6	12	18
Subtotals			124	180

Receptors subscore (100 x factor score subtotal/maximum score subtotal) 69

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (small, medium, or large) L = large
2. Confidence level (confirmed or suspected) C = confirmed
3. Hazard rating (low, medium, or high) H = high

Factor Subscore A (from 20 to 100 based on factor score matrix) 100

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

100 x 0.80 = 80

C. Apply physical state multiplier
Subscore B x Physical State Multiplier = Waste Characteristics Subscore

80 x 1.00 = 80

III. PATHWAYS

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore 0

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating and proceed to C.

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
1. Surface Water Migration				
Distance to nearest surface water	2	8	16	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	1	6	6	18
Rainfall intensity	2	8	16	24
Subtotals			52	108
Subscore (100 x factor score subtotal/maximum score subtotal)				48
2. Flooding	0	1	0	3
Subscore (100 x factor score/3)				0
3. Ground-water migration				
Depth to ground water	2	8	16	24
Net precipitation	1	6	6	18
Soil permeability	2	8	16	24
Subsurface flows	0	8	0	24
Direct access to ground water	1	8	8	24
Subtotals			46	114
Subscore (100 x factor score subtotal/maximum score subtotal)				40

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 48

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors			69	
Waste Characteristics			80	
Pathways			48	
Total	197	divided by 3 =		66 Gross total score

B. Apply factor for waste containment from waste management practices.

Gross total score x waste management practices factor = final score

66 x 0.95 = 62

FINAL SCORE

HAZARD ASSESSMENT RATING METHODOLOGY FORM

Name of site: Fire Protection Training Area No. 3(FPTA#3)
Location: East part of base by Archery Range
Date of Operation: 1969 to present
Owner/Operator: Scott AFB
Comments/Description: Site used 900 gals. 8 -12 times per year.Waste fuels poured onto sand and gravel from 1969 to 1979.Since then concrete basin used with recovery system
Site Rated by: J.R.Absalon; J.R.Butner; E.H.Snider

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	1	4	4	12
B. Distance to nearest well	1	10	10	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to installation boundary	2	6	12	18
E. Critical environments within 1 mile radius of site	2	10	20	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	3	9	27	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	2	6	12	18
Subtotals			100	180

Receptors subscore (100 x factor score subtotal/maximum score subtotal) 56

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (small, medium, or large) M = medium
2. Confidence level (confirmed or suspected) C = confirmed
3. Hazard rating (low, medium, or high) H = high

Factor Subscore A (from 20 to 100 based on factor score matrix) 80

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

80 x 0.80 = 64

C. Apply physical state multiplier
Subscore B x Physical State Multiplier = Waste Characteristics Subscore

64 x 1.00 = 64

III. PATHWAYS

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore 0

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating and proceed to C.

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
1. Surface Water Migration				
Distance to nearest surface water	3	8	24	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	1	6	6	18
Rainfall intensity	2	8	16	24
Subtotals			60	108
Subscore (100 x factor score subtotal/maximum score subtotal)				56
2. Flooding	0	1	0	3
Subscore (100 x factor score/3)				0
3. Ground-water migration				
Depth to ground water	2	8	16	24
Net precipitation	1	6	6	18
Soil permeability	2	8	16	24
Subsurface flows	0	8	0	24
Direct access to ground water	1	8	8	24
Subtotals			46	114
Subscore (100 x factor score subtotal/maximum score subtotal)				40

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 56

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors		56
Waste Characteristics		64
Pathways		56
Total	176	divided by 3 = 59 Gross total score

B. Apply factor for waste containment from waste management practices.

Gross total score x waste management practices factor = final score

59 x 1.00 = 59

FINAL SCORE

HAZARD ASSESSMENT RATING METHODOLOGY FORM

Name of site: Facility 1965 Spill Site
Location: Adjacent to Building 1965
Date of Operation: 1977
Owner/Operator: Scott AFB
Comments/Description: Leak occurred for unknown length of time before discovery.
When discovered tank dug up and repaired, several barrels of gasoline recovered.
Site Rated by: J.R.Absalon; J.R.Butner; E.H.Snider

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	3	4	12	12
B. Distance to nearest well	3	10	30	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to installation boundary	3	6	18	18
E. Critical environments within 1 mile radius of site	1	10	10	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	3	9	27	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	2	6	12	18
Subtotals			124	180

Receptors subscore (100 x factor score subtotal/maximum score subtotal) 69

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (small, medium, or large) S = small
2. Confidence level (confirmed or suspected) C = confirmed
3. Hazard rating (low, medium, or high) H = high

Factor Subscore A (from 20 to 100 based on factor score matrix) 60

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

60 x 0.80 = 48

C. Apply physical state multiplier
Subscore B x Physical State Multiplier = Waste Characteristics Subscore

48 x 1.00 = 48

III. PATHWAYS

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore 0

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating and proceed to C.

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
1. Surface Water Migration				
Distance to nearest surface water	2	8	16	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	1	6	6	18
Rainfall intensity	2	8	16	24
Subtotals			52	108
Subscore (100 x factor score subtotal/maximum score subtotal)				48
2. Flooding	0	1	0	3
Subscore (100 x factor score/3)				0
3. Ground-water migration				
Depth to ground water	2	9	16	24
Net precipitation	1	6	6	18
Soil permeability	2	8	16	24
Subsurface flows	0	8	0	24
Direct access to ground water	1	8	8	24
Subtotals			46	114
Subscore (100 x factor score subtotal/maximum score subtotal)				40

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 48

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors		69		
Waste Characteristics		48		
Pathways		48		
Total	165	divided by 3 =	55	Gross total score

B. Apply factor for waste containment from waste management practices.

Gross total score x waste management practices factor = final score

55 x 0.95 = 52

FINAL SCORE

HAZARD ASSESSMENT RATING METHODOLOGY FORM

Name of site: Sludge Weathering Lagoon
Location: Adjacent to tanks 8552 and 8554
Date of Operation: 1975 to 1980
Owner/Operator: Scott AFB
Comments/Description: Initially used to weather POL tank sludge(8-10 barrels) but waste, paints, and thinners also disposed of here.Cleaned and dug out in 1980.
Site Rated by: J.R.Absalon; J.R.Butner; E.H.Snider

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	1	4	4	12
B. Distance to nearest well	1	10	10	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to installation boundary	2	6	12	18
E. Critical environments within 1 mile radius of site	2	10	20	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	3	9	27	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	2	6	12	18
Subtotals			100	180

Receptors subscore (100 x factor score subtotal/maximum score subtotal) 56

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (small, medium, or large) S = small
2. Confidence level (confirmed or suspected) C = confirmed
3. Hazard rating (low, medium, or high) H = high

Factor Subscore A (from 20 to 100 based on factor score matrix) 60

B. Apply persistence factor
Factor Subscore A x Persistence Factor = Subscore B

60 x 0.80 = 48

C. Apply physical state multiplier
Subscore B x Physical State Multiplier = Waste Characteristics Subscore

48 x 0.75 = 36

III. PATHWAYS

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore 0

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating and proceed to C.

Rating Factor	Factor Rating (0-3)	Multi-plier	Factor Score	Maximum Possible Score
1. Surface Water Migration				
Distance to nearest surface water	3	8	24	24
Net precipitation	1	6	6	18
Surface erosion	1	8	8	24
Surface permeability	1	6	6	18
Rainfall intensity	2	8	16	24
Subtotals			60	108
Subscore (100 x factor score subtotal/maximum score subtotal)				56
2. Flooding	0	1	0	3
Subscore (100 x factor score/3)				0
3. Ground-water migration				
Depth to ground water	2	8	16	24
Net precipitation	1	6	6	18
Soil permeability	2	8	16	24
Subsurface flows	0	8	0	24
Direct access to ground water	1	8	8	24
Subtotals			46	114
Subscore (100 x factor score subtotal/maximum score subtotal)				40

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 56

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors		56	
Waste Characteristics		36	
Pathways		56	
Total	147	divided by 3 =	49 Gross total score

B. Apply factor for waste containment from waste management practices.

Gross total score x waste management practices factor = final score

49 x 0.95 = \ 47 \

FINAL SCORE

APPENDIX I

GLOSSARY OF TERMINOLOGY

AND ABBREVIATIONS

APPENDIX I

GLOSSARY OF TERMINOLOGY AND ABBREVIATIONS

AAW: Aeromedical Airlift Wing

ABG: Air Base Group.

ACFT MAINT: Aircraft Maintenance.

ACIC: Aeronautical Chart and Information Center

AF: Air Force.

AFB: Air Force Base.

AFESC: Air Force Engineering and Services Center.

AFFF: Aqueous Film Forming Foam, a fire extinquishing agent.

AFR: Air Force Regulation.

AFS: Air Force Station.

Ag: Chemical symbol for silver.

AGE: Aerospace Ground Equipment.

Al: Chemical symbol for aluminum.

ALERT AREA: An area near the end of the runway where aircraft are parked and ready for immediate takeoff.

ALLUVIUM: Materials eroded, transported and deposited by streams.

ALLUVIAL FAN: A fan-shaped deposit formed by a stream either where it issues from a narrow mountain valley into a plain or broad valley, or where a tributary stream joins a main stream.

AMS: Avionics Maintenance Squadron

AROMATIC: Description of organic chemical compounds in which the carbon atoms are arranged into a ring with special electron stability associated. Aromatic compounds are often more reactive than non-aromatics.

ARTESIAN: Ground water contained under hydrostatic pressure.

AQUIFER: A geologic formation, group of formations, or part of a formation that is capable of yielding water to a well or spring.

AVGAS: Aviation Gasoline.

Ba: Chemical symbol for barium.

BEDROCK: Any solid rock exposed at the surface of the earth or overlain by unconsolidated material.

BEE: Bioenvironmental Engineer.

BES: Bioenvironmental Engineering Services.

BIOACCUMULATE: Tendency of elements or compounds to accumulate or build up in the tissues of living organisms when they are exposed to these elements in their environments, e.g., heavy metals.

BIODEGRADABLE: The characteristic of a substance to be broken down from complex to simple compounds by microorganisms.

BOWSER: A portable tank, usually under 200 gallons in capacity.

BX: Base Exchange.

$CaCO_3$: Chemical symbol for calcium carbonate.

CAMS: Consolidated Aircraft Maintenance Squadron.

CB: A dry fire extinquishing agent; chlorobromomethane

Cd: Chemical symbol for cadmium.

CE: Civil Engineering.

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act.

CES: Civil Engineering Squadron.

CIRCA: About; used to indicate an approximate date.

CLOSURE: The completion of a set of rigidly defined functions for a hazardous waste facility no longer in operation.

CMS: Component Maintenance Squadron.

CN: Chemical symbol for cyanide.

COD: Chemical Oxygen Demand, a measure of the amount of oxygen required to oxidize organic and oxidizable inorganic compounds in water.

COE: Corps of Engineers.

COMD: Command.

CONFINED AQUIFER: An aquifer bounded above and below by impermeable strata or by geologic units of distinctly lower permeability than that of the aquifer itself.

CONTAMINATION: The degradation of natural water quality to the extent that its usefulness is impaired; there is no implication of any specific limits since the degree of permissible contamination depends upon the intended end use or uses of the water.

Cr: Chemical symbol for chromium.

Cu: Chemical symbol for copper.

CURIE: Unit for measuring radioactivity. One curie is the quantity of any radioactive isotope undergoing 3.7×10^{10} disintegrations per second.

D: Disposal site/method.

DEQPPM: Defense Environmental Quality Program Policy Memorandum

DET: Detachment.

DIP: The angle at which a stratum is inclined from the horizontal.

DISPOSAL FACILITY: A facility or part of a facility at which hazardous waste is intentionally placed into or on land or water, and at which waste will remain after closure.

DISPOSAL OF HAZARDOUS WASTE: The discharge, deposit, injection, dumping, spilling, or placing of any hazardous waste into or on land or water so that such waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground water.

DMA: Defense Mapping Agency.

DMAAC: Defense Mapping Agency Aerospace Center

DOD: Department of Defense.

DOWNGRADIENT: In the direction of decreasing hydraulic static head; the direction in which ground water flows.

DPDO: Defense Property Disposal Office, previously included Redistribution and Marketing (R&M) and Salvage.

DUMP: An uncovered land disposal site where solid and/or liquid wastes are deposited with little or no regard for pollution control or aesthetics; dumps are susceptible to open burning and are exposed to the elements, disease vectors and scavengers.

EFFLUENT: A liquid waste discharge from a manufacturing or treatment process, in its natural state, or partially or completely treated, that discharges into the environment.

EOD: Explosive Ordnance Disposal.

EP: Extraction Procedure, the EPA's standard laboratory procedure for leachate generation.

EPA: U.S. Environmental Protection Agency.

EPHEMERAL: Short-lived or temporary.

EPHEMERAL AQUIFER: A water-bearing zone typically located near the surface which normally contains water seasonally.

EROSION: The wearing away of land surface by wind, water, or chemical processes.

ES: Engineering-Science, Inc.

FAA: Federal Aviation Administration.

FACILITY (As Applied to Hazardous Wastes): Any land and appurtenances thereon and thereto used for the treatment, storage and/or disposal of hazardous wastes.

FAULT: A fracture in rock along which the adjacent rock surfaces are differentially displaced.

Fe: Chemical symbol for iron.

FLOOD PLAIN: The lowland and relatively flat areas adjoining inland and coastal areas of the mainland and off-shore islands, including, at a minimum, areas subject to a one percent or greater chance of flooding in any given year.

FLOW PATH: The direction or movement of ground water as governed principally by the hydraulic gradient.

FMB: Field Maintenance Branch.

FMS: Field Maintenance Squadron.

FPTA: Fire Protection Training Area.

GC/MS: Gas chromatograph/mass spectrophotometer, a laboratory procedure for identifying unknown compounds.

GLACIAL TILL: Unsorted and unstratified drift consisting of clay, sand, gravel and boulders which is deposited by or underneath a glacier.

GROUND WATER: Water beneath the land surface in the saturated zone that is under atmospheric or artesian pressure.

GROUND WATER RESERVOIR: The earth materials and the intervening open spaces that contain ground water.

HALF-LIFE: The time required for half the atoms present in radioactive substance to disintegrate.

HALOGEN: The class of chemical elements including fluorine, chlorine, bromine, and iodine.

HALON 1211: A fire extinguishing agent.

HARDFILL: Disposal sites receiving construction debris, wood, miscellaneous spoil material.

HARM: Hazard Assessment Rating Methodology.

HAZARDOUS SUBSTANCE: Under CERCLA, the definition of hazardous substance includes:

1. All substances regulated under Paragraphs 311 and 307 of the Clean Water Act (except oil);
2. All substances regulated under Paragraph 3001 of the Solid Waste Disposal Act;
3. All substances regulated under Paragraph 112 of the Clean Air Act;
4. All substances which the Administrator of EPA has acted against under Paragraph 7 of the Toxic Substance Control Act;
5. Additional substances designated under Paragraph 102 of the Superfund bill.

HAZARDOUS WASTE: As defined in RCRA, a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

HAZARDOUS WASTE GENERATION: The act or process of producing a hazardous waste.

HEAVY METALS: Metallic elements, including the transition series, which include many elements required for plant and animal nutrition in trace concentrations but which become toxic at higher concentrations.

Hg: Chemical symbol for mercury.

HQ: Headquarters.

HWMF: Hazardous Waste Management Facility.

HYDROCARBONS: Organic chemical compounds composed of hydrogen and carbon atoms chemically bonded. Hydrocarbons may be straight chain, cyclic, branched chain, aromatic, or polycyclic, depending upon arrangement of carbon atoms. Halogenated hydrocarbons are hydrocarbons in which one or more hydrogen atoms has been replaced by a halogen atom.

INCOMPATIBLE WASTE: A waste unsuitable for commingling with another waste or material because the commingling might result in generation of extreme heat or pressure, explosion or violent reaction, fire, formation of substances which are shock sensitive, friction sensitive, or otherwise have the potential for reacting violently, formation of toxic dusts, mists, fumes, and gases, volatilization of ignitable or toxic chemicals due to heat generation in such a manner that the likelihood of contamination of ground water or escape of the substance into the environment is increased, any other reaction which might result in not meeting the air, human health, and environmental standards.

INFILTRATION: The movement of water through the soil surface into the ground.

IRP: Installation Restoration Program.

JP-4: Jet Propulsion Fuel Number Four; contains both kerosene and gasoline fractions.

LANDFILL: A land disposal site used for disposing solid and semi-solid materials. May refer either to a sanitary landfill or dump.

LEACHATE: A solution resulting from the separation or dissolving of soluble or particulate constituents from solid waste or other man-placed medium by percolation of water.

LEACHING: The process by which soluble materials in the soil, such as nutrients, pesticide chemicals or contaminants, are washed into a lower layer of soil or are dissolved and carried away by water.

LENTICULAR: A bed or rock stratum or body that is lens-shaped.

LINER: A continous layer of natural or man-made materials beneath or on the sides of a surface impoundment, landfill, or landfill cell which restricts the downward or lateral escape of hazardous waste, hazardous waste constituents or leachate.

LITHOLOGY: The description of the physical character of a rock.

LOESS: An essentially unconsolidated unstratified calcareous silt; commonly homogeneous, permeable and buff to gray in color.

m: Milli (10^{-3}).

MAC: Military Airlift Command.

MAW: Military Airlift Wing.

MEK: Methyl Ethyl Ketone.

METALS: See "Heavy Metals".

MICRO: u (10^{-6}).

ug/l: Micrograms per liter.

mg/l: Milligrams per liter.

MGD: Million Gallons per Day.

MOGAS: Motor gasoline.

Mn: Chemical symbol for manganese.

MONITORING WELL: A well used to measure ground-water levels and to obtain samples.

MSL: Mean Sea Level.

MUNITION ITEMS: Munitions or portions of munitions having an explosive potential.

MUNITIONS RESIDUE: Non-explosive segments of waste munitions (i.e., bomb casings).

MWR: Morale Welfare and Recreation.

NCO: Non-commissioned Officer.

NCOIC: Non-commissioned Officer In-Charge.

NDI: Non-destructive Inspection.

NET PRECIPITATION: The amount of annual precipitation minus annual evaporation.

NGVD: National Geodetic Vertical Datum of 1929.

Ni: Chemical symbol for nickel.

NOAA: National Oceanic and Atmospheric Administration.

NON-CALCAREOUS: Not bearing calcium carbonate ($CaCO_3$) a characteristic mineral of marine paleoenvironment.

NPDES: National Pollutant Discharge Elimination System.

OEHL: Occupational and Environmental Health Laboratory.

OIC: Officer-In-Charge.

OMS: Organizational Maintenance Squadron.

ORGANIC: Being, containing or relating to carbon compounds, especially in which hydrogen is attached to carbon.

OSI: Office of Special Investigations.

O&G: Symbols for oil and grease.

Pb: Chemical symbol for lead.

PCB: Polychlorinated Biphenyl; liquids used as a dielectrics in electrical equipment.

PD-680: Cleaning solvent; petroleum distillate, Stoddard solvent.

PERCHED WATER TABLE: A water table above a relatively impermeable zone underlain by unsaturated rocks of sufficient permeability to allow ground-water movement.

PERCOLATION: Movement of moisture by gravity or hydrostatic pressure through interstices of unsaturated rock or soil.

PERMEABILITY: The capacity of a porous rock, soil or sediment for transmitting a fluid without damage to the structure of the medium.

PERSISTENCE: As applied to chemicals, those which are very stable and remain in the environment in their original form for an extended period of time.

PESTICIDE: An agent used to destroy pests. Pesticides include such specialty groups as herbicides, fungicides, insecticides, etc.

pH: Negative logarithm of hydrogen ion concentration; measurement of acids and bases.

Pico: 10^{-12}; p

PL: Public Law.

PMEL: Precision Measurement Equipment Lab.

POL: Petroleum, Oils and Lubricants.

POLLUTANT: Any introduced gas, liquid or solid that makes a resource unfit for a specific purpose.

POLYCYCLIC COMPOUND: All compounds in which carbon atoms are arranged into two or more rings, usually aromatic in nature.

POTENTIOMETRIC SURFACE: The imaginery surface to which water in an artesian aquifer would rise in tightly screened wells penetrating it.

ppb: Parts per billion by weight.

ppm: Parts per million by weight.

PRECIPITATION: Rainfall.

RCRA: Resource Conservation and Recovery Act.

RECEPTORS: The potential impact group or resource for a waste contamination source.

RECHARGE AREA: A surface area in which surface water or precipitation percolates through the unsaturated zone and eventually reaches the zone of saturation. Recharge areas may be natural or manmade.

RECHARGE: The addition of water to the ground-water system by natural or artificial processes.

RM: Resource Management.

S: Storage site/method.

SANITARY LANDFILL: A land disposal site using an engineered method of disposing solid wastes on land in a way that minimizes environmental hazards.

SATURATED ZONE: That part of the earth's crust in which all voids are filled with water.

SAX'S TOXICITY: A rating method for evaluating the toxicity of chemical materials.

SCS: U.S. Department of Agriculture Soil Conservation Service.

SEISMICITY: Pertaining to earthquakes or earth vibrations.

SLUDGE: The solid residue resulting from a manufacturing or wastewater treatment process which also produces a liquid stream. The residue which accumulates in liquid fuel storage tanks.

SLUDGE WEATHERING: The process of reducing the moisture content of sludge.

SOLID WASTE: Any garbage, refuse, or sludge from a waste treatment plant, water supply treatment, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, or agricultural operations and from community activities, but does not include solid or dissolved materials in domestic sewage; solid or dissolved materials in irrigation return flows; industrial discharges which are point source subject to permits under Section 402 of the Federal Water Pollution Control Act, as amended (86 USC 880); or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954 (68 USC 923).

SPILL: Any unplanned release or discharge of a hazardous waste onto or into the air, land, or water.

STORAGE OF HAZARDOUS WASTE: Containment, either on a temporary basis or for a longer period, in such a manner as not to constitute disposal of such hazardous waste.

STP: Sewage Treatment Plant.

SUPS: Supply Squadron.

T: Treatment site/method.

TDS: Total Dissolved Solids.

TOC: Total Organic Carbon.

TOXICITY: The ability of a material to produce injury or disease upon exposure, ingestion, inhalation, or assimilation by a living organism.

TRANS: Transportation Squadron.

TRANSMISSIVITY: The rate at which water is transmitted through a unit width of aquifer under a unit hydraulic gradient.

TREATMENT OF HAZARDOUS WASTE: Any method, technique, or process including neutralization designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize the waste or so as to render the waste nonhazardous.

TTS: Technical Training Squadron.

UPGRADIENT: In the direction of increasing hydraulic static head; the direction opposite to the prevailing flow of ground-water.

US: United States.

USAF: United States Air Force.

USDA: United States Department of Agriculture.

USFWS: United States Fish and Wildlife Service.

USGS: United States Geological Survey.

WATER TABLE: Surface of a body of unconfined ground water at which the pressure is equal to that of the atmosphere.

WWTP: Wastewater Treatment Plant.

Zn: Chemical symbol for zinc.

APPENDIX J

REFERENCES

APPENDIX J

REFERENCES

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APPENDIX K

INDEX TO REFERENCE TO POTENTIAL CONTAMINATION SITES

AT SCOTT AFB

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